# NORTH CAROLINA Medical Journal

Vol. 20 No. 1
January, 1959


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## SYMPOSIUM ON TRAUMA


*assures a more decisive response*

new ILOSONE™

*in almost every common bacterial infection*

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# NORTH CAROLINA MEDICAL JOURNAL

*Official Organ of*

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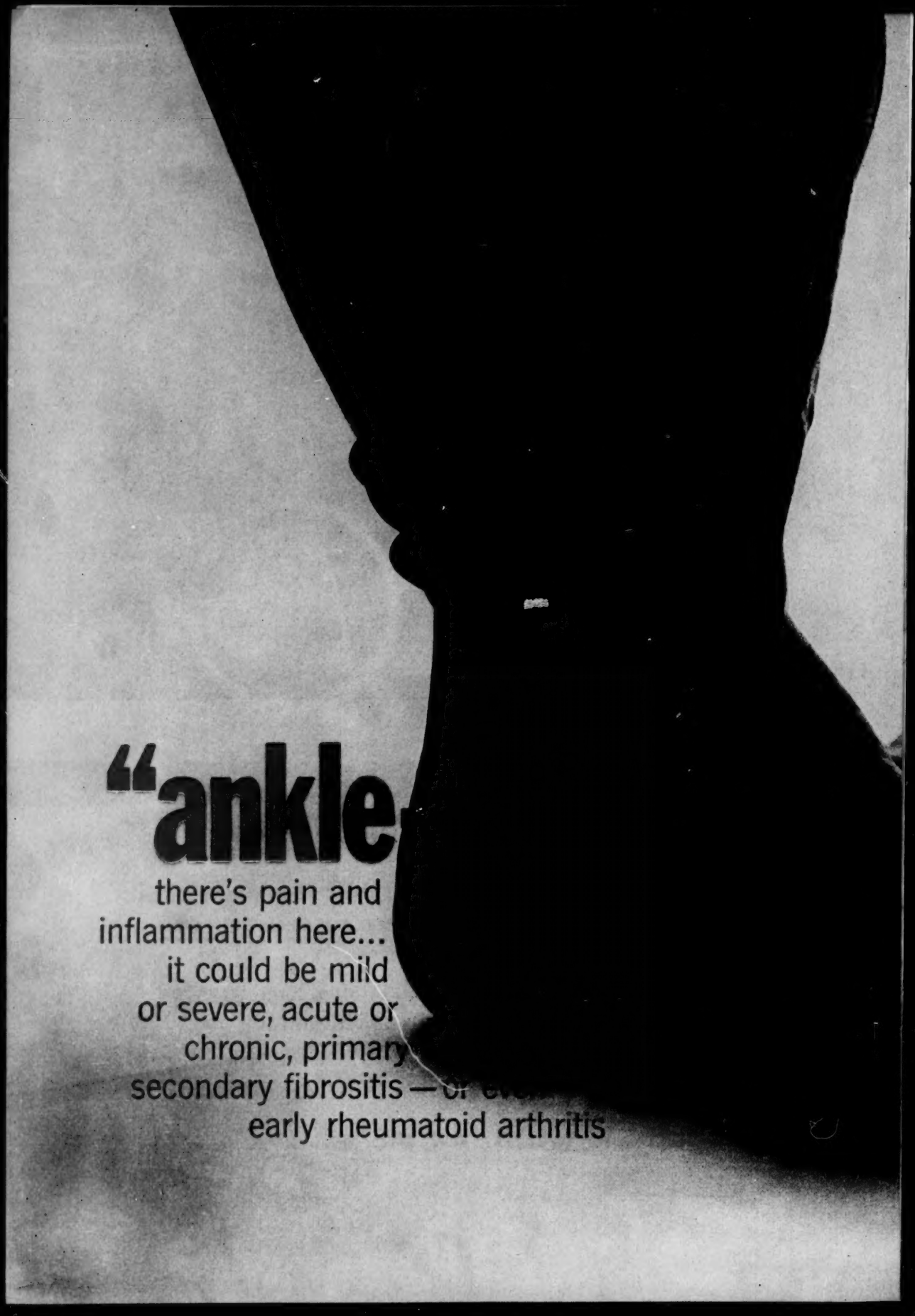
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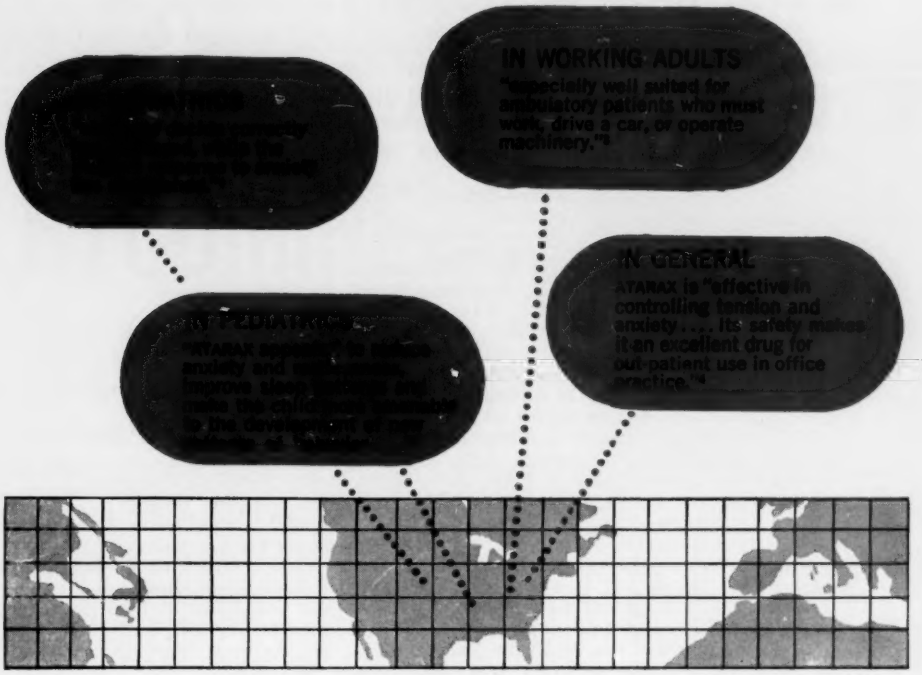
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**References:** 1. Smigel, J. O., et al.: J. Am. Ger. Soc., in press. 2. Freedman, A. M.: Pediat. Clin. North America 5:573 (Aug.) 1958. 3. Ayd, F. J., Jr.: New York J. Med. 57:1742 (May 15) 1957. 4. Menger, H. C.: New York J. Med. 58:1684 (May 15) 1958. 5. Coirault, M., et al.: Presse méd. 64:2239 (Dec. 26) 1956. 6. Bayart, J.: Presented at the International Congress of Pediatrics, Copenhagen, Denmark, July 22-27, 1956.

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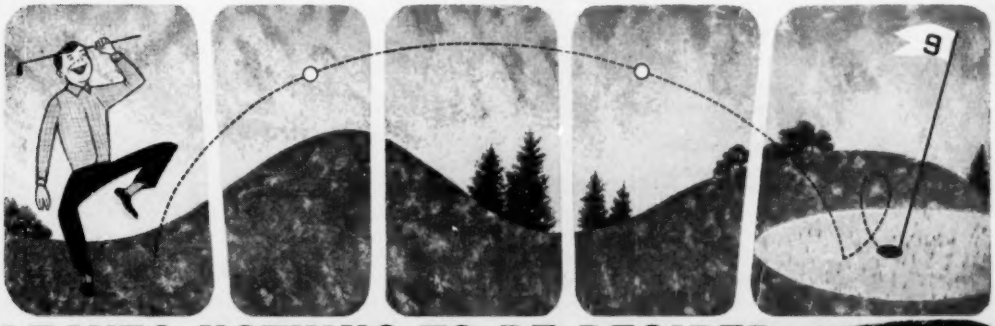


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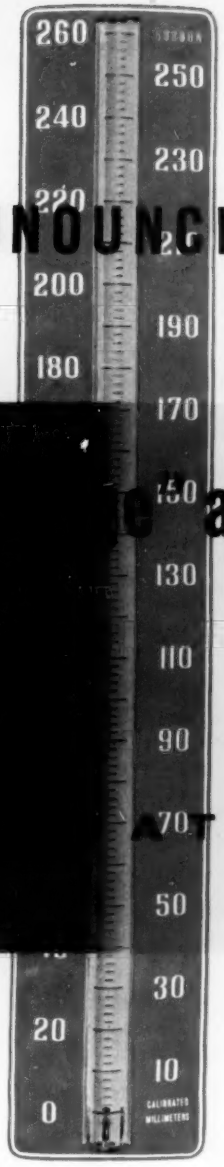


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more hypertensives can be better controlled
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... with greater simplicity and convenience

a logical alliance of two antihypertensives
you know and trust provides

# increased effectiveness, decreased side effects

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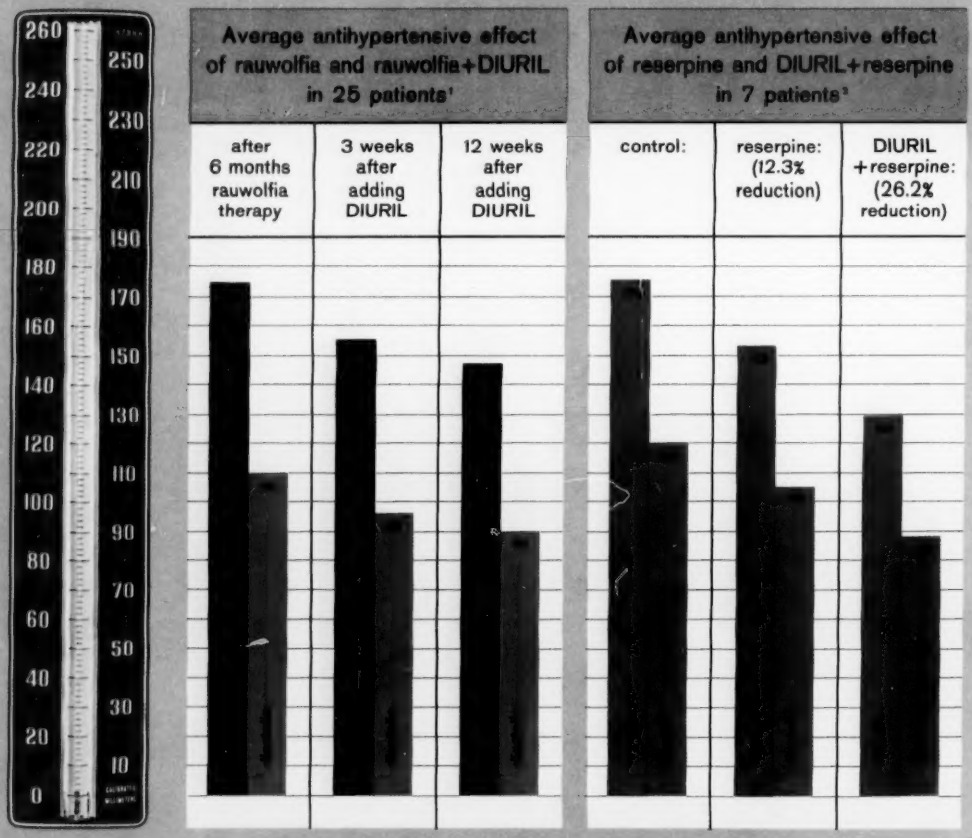

# DIUPRES

DIURIL® WITH RESERPINE

## effective therapy for most patients

DIUPRES by itself usually provides effective therapy for a majority of patients with mild or moderate hypertension, and even for many patients with severe hypertension. Many patients now treated with other agents which frequently cause distressing side effects can be adequately managed with well tolerated DIUPRES.

## provides basic therapy

Should other drugs need to be added to DIUPRES, they can be given in much lower than usual dosage so that their side effects are often strikingly reduced.

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The antihypertensive action of DIUPRES is rapidly evident. (Considerable time may elapse before the antihypertensive effect of reserpine alone is observed.)

## fewer and less severe side effects

DIUPRES may be expected to cause fewer and less severe side effects than are encountered with other antihypertensive therapy. (Since DIURIL and reserpine potentiate each other, the required dosage of each is usually less when given together as DIUPRES than when given alone. Such reduction in dosage makes side effects less likely to occur.)

## often obviates weight gain

DIUPRES minimizes the problem of weight gain seen with reserpine (reserpine alone has been reported to produce weight gain in 50 per cent of patients).[1,4]

## virtually eliminates fluid retention

DIUPRES is not likely to cause either clinical or subclinical retention of sodium and water. (Hypotensive drugs, particularly rauwolfia[5] and hydralazine,[6] may cause fluid retention. Even when such retention is subclinical, their antihypertensive effectiveness is diminished.[6])

## diet more palatable

With DIUPRES, there is less need for rigid restriction of dietary salt, which patients find so burdensome.

> *"It may well be that the drug* [DIURIL] *produces the benefits of a markedly restricted low sodium diet but without its hardships."*[3]

## subjective and objective improvement

DIUPRES allays anxiety and tension, thus reducing the emotional component of hypertension. Organic changes of hypertension may be arrested and reversed. Headache, dizziness, palpitations and tachycardia are usually promptly relieved by DIUPRES. When the *anginal syndrome* accompanies hypertension, the administration of DIUPRES may also cause diminution or even disappearance of this syndrome concurrent with control of the hypertension.

## convenient, controlled dosage

Instead of two separate prescriptions, you write one prescription . . . the patient takes one tablet, rather than two different tablets . . . and the dosage schedule is easier for the patient to remember and follow.

> *"patients have fewer lapses and make fewer mistakes in dosage, the simpler the regimen can be made. Therefore I do not hesitate to use more than one medicament combined in one tablet, provided this gives approximately the correct dosage of each."*[6]

## economical

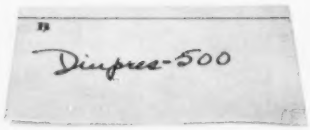
DIUPRES will cost the patient less than if he were given two separate prescriptions for its components.

**Indications:**
DIUPRES is indicated in hypertension of all degrees of severity. It can be used in the following ways:

- as total therapy
- as primary therapy, adding other drugs if necessary
- as replacement or adjunctive therapy in patients now treated with other agents

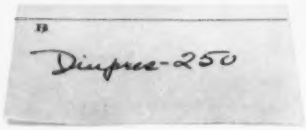
**Precautions:**
The precautions normally observed with DIURIL or reserpine apply to DIUPRES. Additional information on DIUPRES is available to physicians on request.

**Recommended dosage range:**
DIUPRES-500—one tablet one to three times a day.
DIUPRES-250—one tablet one to four times a day.
If necessary, other agents may be added.
If the patient is receiving ganglion blocking agents or hydralazine, their dosage should be cut by 50 per cent when DIUPRES is added.




## DIUPRES-500

500 mg. DIURIL (chlorothiazide), 0.125 mg. reserpine.
Bottles of 100, 1000.




## DIUPRES-250

250 mg. DIURIL (chlorothiazide), 0.125 mg. reserpine.
Bottles of 100, 1000.

**the first "wide range" antihypertensive**

# DIUPRES

DIURIL® WITH RESERPINE

1. Rochelle, J. B., III, Bullock, A. C., and Ford, R. V.: Potentiation of antihypertensive therapy by use of chlorothiazide, *J.A.M.A.* 168:410, Sept. 27, 1958. 2. Freis, E. D., Wanko, A., Wilson, I. M., and Parrish, A. E.: Treatment of essential hypertension with chlorothiazide (Diuril), *J.A.M.A.* 166:137, Jan. 11, 1958. 3. Freis, E. D.: Treatment of hypertension. (Presented at the Annual Meeting of Southern Medical Association, Nov. 13, 1957.) 4. Moyer, J. H., Dennis, E., and Ford, R.: Drug therapy (Rauwolfia) of hypertension, *A.M.A. Arch. Int. Med.* 96:530, Oct. 1955. 5. Perera, G. A.: Edema and congestive failure related to administration of rauwolfia serpentina, *J.A.M.A.* 159:439, Oct. 1, 1955. 6. Wilkins, R. W.: Precautions in use of antihypertensive drugs, including chlorothiazide, *J.A.M.A.* 167:801, June 14, 1958.

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*DIUPRES and DIURIL (chlorothiazide) are trademarks of Merck & Co., Inc.

# new for cough

## tastes good

the straws just symbolize the good flavor! And DIMETANE EXPECTORANT for cough is as effective as it is delicious. FORMULA: each 5 cc. (1 teaspoonful) contains: DIMETANE (Parabromdylamine Maleate) 2.0 mg.; Glyceryl Guaiacolate 100.0 mg.; Phenylephrine Hydrochloride, USP 5.0 mg.; Phenylpropanolamine Hydrochloride, NNR 5.0 mg.; Alcohol 3.5% in a good-tasting aromatic base.

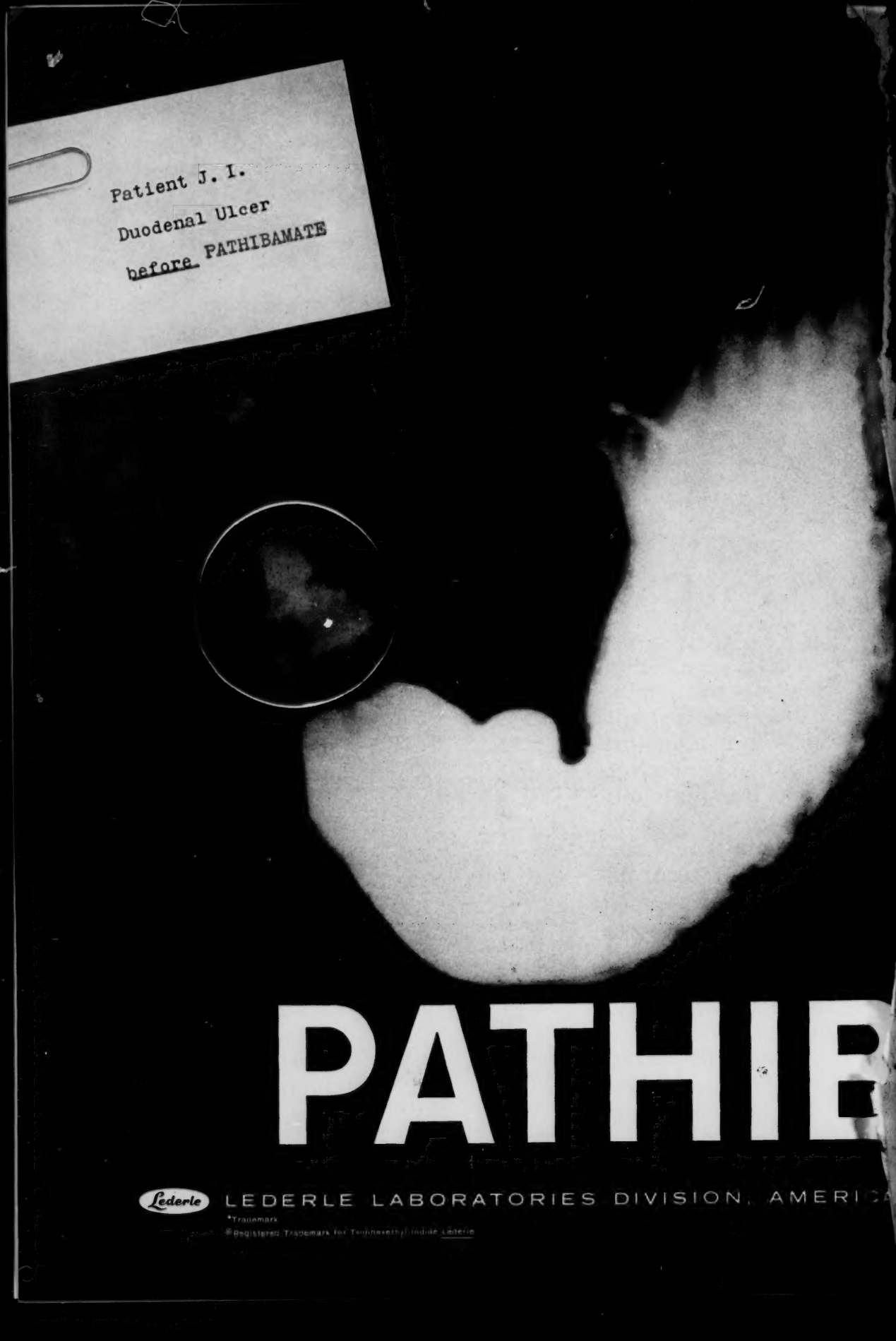
## works better

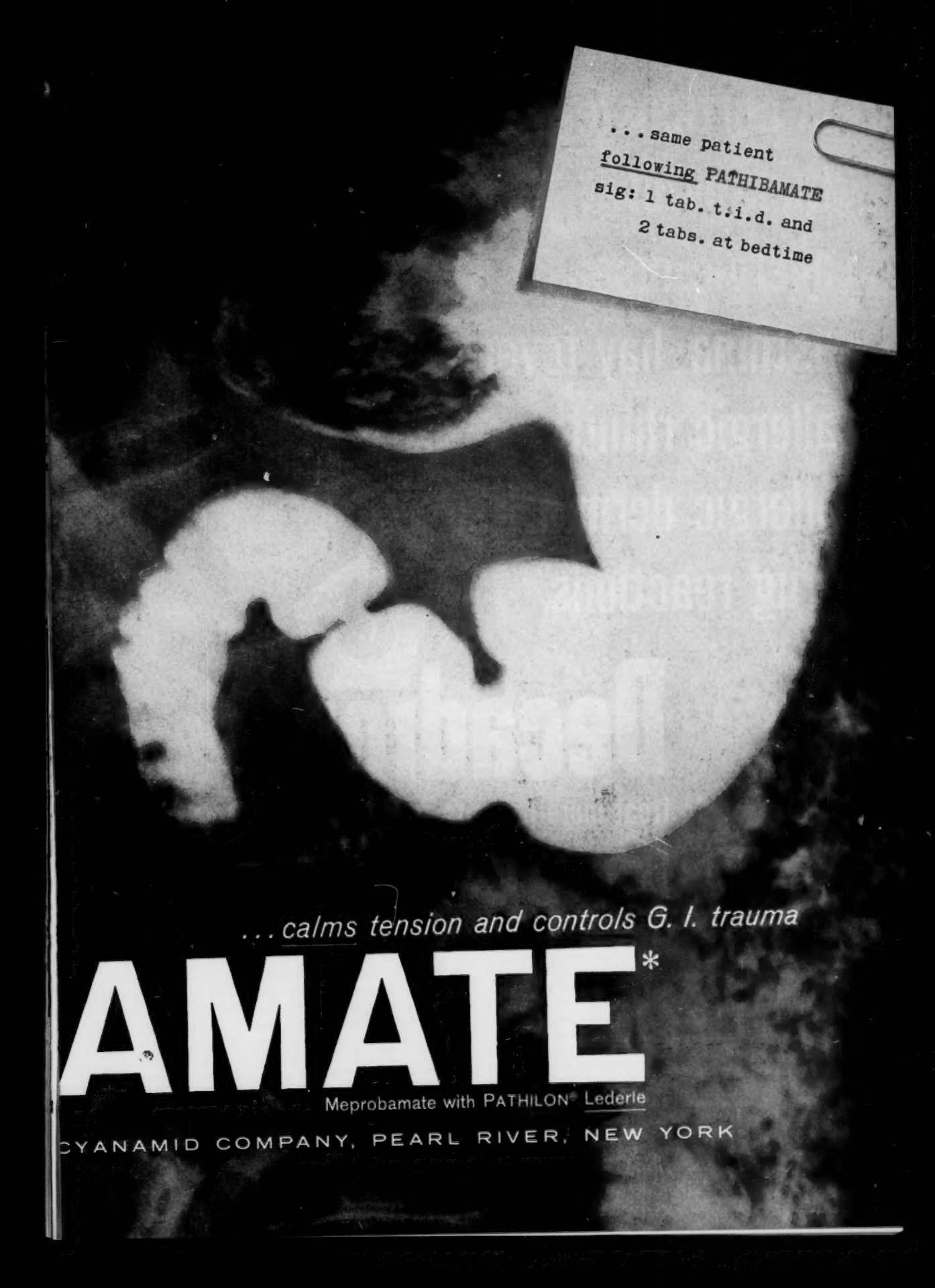
combines the unsurpassed antihistamine Dimetane with the clinically proven expectorant glyceryl guaiacolate (which increases R.T.F. almost 200%) and two recognized decongestants. When additional cough suppressant action is indicated, prescribe DIMETANE EXPECTORANT-DC, which provides the basic formula with dihydrocodeinone bitartrate 1.8 mg. per 5 cc. (exempt narcotic).

# Dimetane® Expectorant
# Dimetane® Expectorant-DC

Robins

(WITH DIHYDROCODEINONE BITARTRATE 1.8 MG./5CC.)


Patient J. I.
Duodenal Ulcer
before PATHIBAMATE
PATHIB
Lederle
LEDERLE LABORATORIES DIVISION, AMERI
*Trademark
®Registered Trademark for Tedinoxethyl Iodide Lederle


. . . same patient
following PATHIBAMATE
sig: 1 tab. t.i.d. and
2 tabs. at bedtime
. . . calms tension and controls G. I. trauma
AMATE*
Meprobamate with PATHILON® Lederle
CYANAMID COMPANY, PEARL RIVER, NEW YORK

# in corticosteroid therapy of allergic diseases asthma-hay fever allergic rhinitis allergic dermatitis drug reactions

# Decadron*

to treat more patients more effectively

## a new order of magnitude in therapeutic effectiveness
## a new order of magnitude in margin of safety

Excellent and good-to-excellent results are reported† with DECADRON in nearly all of 362 patients with various allergic disorders, including a number of cases who had failed to respond to other corticosteroids. **No major reactions** were observed in these extensive clinical studies even after four months of continuous therapy—DECADRON produced no peptic ulcer, no diabetes, no significant hypertension, no sodium retention, no potassium depletion, no edema, no undesirable psychic reactions, and no unusual or new side effects. Less than five per cent of patients experienced minor reactions, none of which prevented continuing administration of DECADRON.

Moreover, several investigators report that side effects induced by previous corticosteroid therapy such as gastric intolerance, peripheral edema, headache, vertigo, muscle weakness, ecchymoses, flushing, sweating, moon facies, hypertension, hirsutism, and acne **often disappeared during therapy with DECADRON.** †Analysis of clinical reports.

**Dosage:** One 0.75 mg. tablet of DECADRON will replace one 4 mg. tablet of methylprednisolone or triamcinolone, one 5 mg. tablet of prednisone or prednisolone, one 20 mg. tablet of hydrocortisone, or one 25 mg. tablet of cortisone.

Detailed information on dosage and precautions is available to physicians on request.

**Supplied:** As 0.75 and 0.5 mg. scored, pentagon-shaped tablets in bottles of 100.

©1958 Merck & Co., Inc. *DECADRON is a trademark of Merck & Co., Inc.

MSD MERCK SHARP & DOHME
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in peptic ulcer

*Results with "... antacid therapy with DAA are essentially the same as ... with potent anticholinergic drugs."*

# Alglyn®

*Dihydroxy aluminum aminoacetate, N.N.R.*

In recent years, a number of new synthetic anticholinergic drugs with numerous and varying side effects have been investigated for treatment of peptic ulcer. However, a double-blind study conducted recently by Cayer et al suggests that the use of such anticholinergic drugs is seldom necessary. The authors concluded that "The percentage of 'good to excellent' results obtained in patients on continuous long-term antacid therapy with DAA (74%) is essentially the same as that previously noted in ulcer patients treated under similar conditions with potent anticholinergic drugs alone."

The authors' choice of dihydroxy aluminum aminoacetate (DAA) was based on the fact that "the tablet form of DAA (is) more active than a variety of straight aluminum hydroxide magmas." They further commented that "Because of the convenience of tablet medication as compared with the liquid gel—a convenience which in the use of other tablets is gained at the expense of therapeutic effectiveness—dihydroxy aluminum aminoacetate was used exclusively."

ALGLYN (dihydroxy aluminum aminoacetate) Tablets are supplied in bottles of 100 tablets (0.5 Gm. per tablet).

BRAYTEN PHARMACEUTICAL COMPANY • *Chattanooga 9, Tennessee*

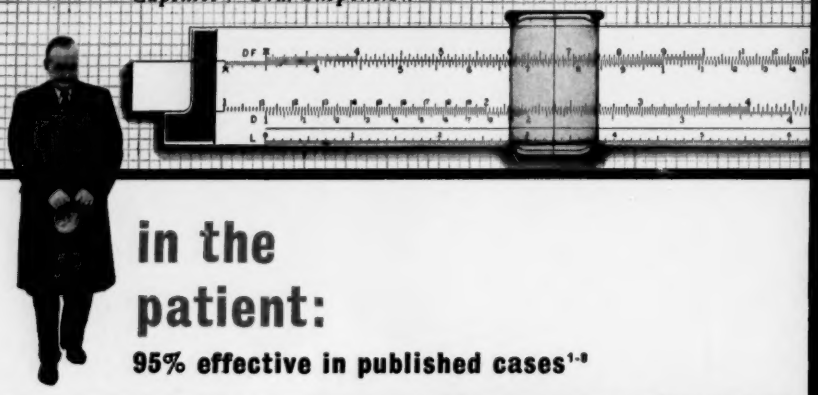
PRONOUNCED TAY-O

# Rx Tao*

(triacetyloleandomycin)

*Capsules / Oral Suspension*

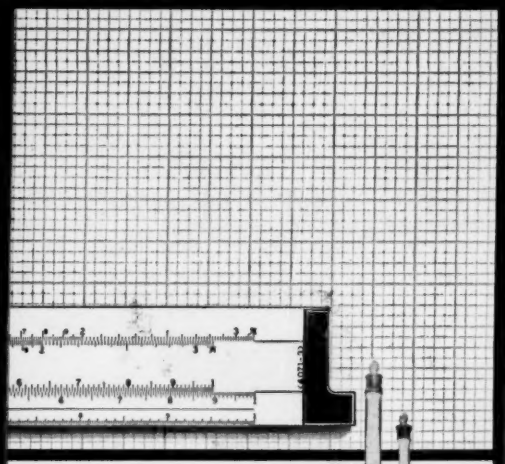
** designed for superior control of common Gram-positive infections*



## in the patient:

**95% effective in published cases[1-9]**

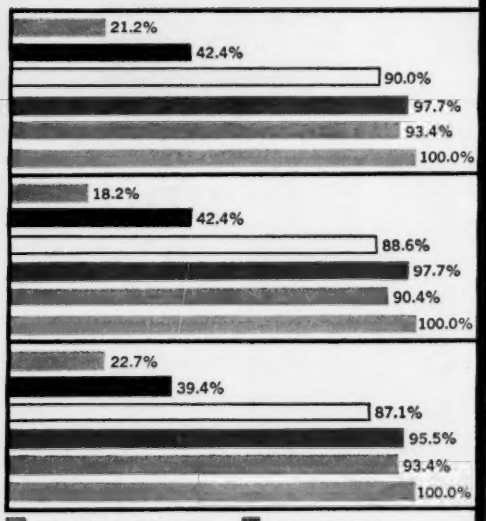
| Conditions treated | No. of Patients | Cured | Improved | Failure |
|---|---|---|---|---|
| **ALL INFECTIONS** | 558 | 448 | 80 | 30 |
| **Respiratory infections** | 258 | 208 | 31 | 19 |
| Pharyngitis and/or tonsillitis | 65 | 58 | 5 | 2 |
| Pneumonia | 90 | 66 | 17 | 7 |
| Infectious asthma | 44 | 38 | – | 6 |
| Otitis media | 31 | 29 | 2 | – |
| Other respiratory (bronchitis, bronchiolitis, bronchiectasis, pneumonitis, laryngotracheitis, strep throat) | 28 | 17 | 7 | 4 |
| **Skin and soft tissue infections** | 230 | 191 | 38 | 1 |
| Infected wounds, incisions and lacerations | 41 | 33 | 8 | – |
| Abscesses | 51 | 43 | 8 | – |
| Furunculosis | 58 | 51 | 6 | 1 |
| Acne, pustular | 43 | 28 | 15 | – |
| Pyoderma | 19 | 19 | – | – |
| Other skin and soft tissue (infected burns, cellulitis, impetigo, ulcers, others) | 18 | 17 | 1 | – |
| **Genitourinary infections** | 28 | 19 | 3 | 6 |
| Acute pyelitis and cystitis | 10 | 8 | 2 | – |
| Urethritis with gonorrhea or cystitis | 8 | 8 | – | – |
| Pyelonephritis | 4 | 1 | – | 3 |
| Salpingitis | 5 | 1 | 1 | 3 |
| Pelvic inflammation with endometriosis | 1 | 1 | – | – |
| **Miscellaneous** (adenitis, enteritis, enterocolitis, subacute bacterial endocarditis, fever, hematoma, staphylococcus carriers, osteomyelitis, tenosynovitis, septic arthritis, acute bursitis, periarthritis) | 42 | 30 | 8 | 4 |



# in the laboratory:

## over 90% effective against resistant staph

**COMPARATIVE TESTS BY THREE METHODS (DISC, TUBE DILUTION, CYLINDER PLATE) ON 130 STAPHYLOCOCCI[9]**




Percentage of organisms inhibited by the range of concentrations listed for each antibiotic.

### Other Tao advantages:

**Rapidly absorbed**—stable in gastric acid,[7] TAO needs no retarding protective coating

**Low in toxicity**—freedom from side effects in 96% of patients treated; cessation of therapy is rarely required

**Highly palatable**—"practically tasteless"[7] active ingredient in a pleasant cherry-flavored medium.

**Dosage and Administration:** Dosage varies according to the severity of the infection. **For adults,** the average dose is 250 mg. q.i.d.; to 500 mg. q.i.d. in more severe infections. **For children** 8 months to 8 years, a daily dose of approximately 30 mg./Kg. body weight in divided doses has been found effective. Since TAO is therapeutically stable in gastric acid, it may be administered without regard to meals.

**Supplied:** TAO Capsules—250 mg. and 125 mg., bottles of 60. TAO for Oral Suspension—1.5 Gm., 125 mg. per teaspoonful (5 cc.) when reconstituted; unusually palatable cherry flavor; 2 oz. bottle.

**References:** 1. Koch, R., and Asay, L. D.: J. Pediat., in press. 2. Leming, B. H., Jr., et al.: Paper presented at the Symposium on Antibiotics, Washington, D. C., Oct. 15-17, 1958. 3. Mellman, et al.: Paper presented at the Symposium on Antibiotics, Washington, D. C., Oct. 15-17, 1958. 4. Olansky, S., and McCormick, G. E., Jr.: Paper presented at the Symposium on Antibiotics, Washington, D. C., Oct. 15-17, 1958. 5. Shubin, H., et al.: Antibiotics Annual 1957-1958, New York, N. Y., Medical Encyclopedia, Inc., 1958, p. 679. 6. Isenberg, H., and Karelitz, S.: Paper presented at the Symposium on Antibiotics, Washington, D. C., Oct. 15-17, 1958. 7. Wennersten, J. R.: Antibiotic Med. & Clin. Therapy 5:527 (Aug.) 1958. 8. Kaplan, M. A., and Goldin, M.: Paper presented at the Symposium on Antibiotics, Washington, D. C., Oct. 15-17, 1958. 9. Truant, J. P.: Paper presented at the Symposium on Antibiotics, Washington, D. C., Oct. 15-17, 1958.

### TAO dosage forms— for specific clinical situations

**TAO Pediatric Drops**

For children—flavorful, easy to administer.

Supplied: When reconstituted, 100 mg. per cc. Special calibrated droppers—5 drops (approx. 25 mg. of TAO) and 10 drops (approx. 25 mg. of TAO). 10 cc. bottle.

**TAO-AC** (TAO analgesic, antihistaminic compound)

To eradicate pain and physical discomfort in respiratory disorders.

Supplied: In bottles of 36 capsules.

**TAOMID®** (TAO with triple sulfas)

For dual control of Gram-positive and Gram-negative infections.

Supplied: Tablets, bottles of 60. Oral Suspension, bottles of 60 cc.

**Intramuscular or Intravenous**

For direct action—in clinical emergencies.

Supplied: In 10 cc. vials.

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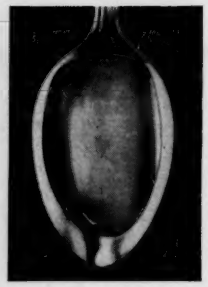
Division, Chas. Pfizer & Co., Inc.
Science for the World's Well-Being



in a form to fit

every antibiotic

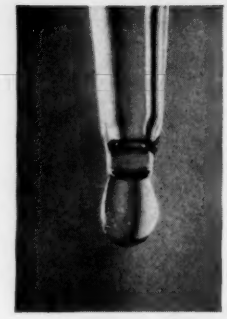
need ...

ACHROMYCIN*

ACHROMYCIN Tetracycline

ACHROMYCIN V Tetracycline with Citric Acid Lederle

the most widely used and useful... antibiotic



**ACHROMYCIN V:** Capsules • Pediatric Drops • Syrup

**ACHROMYCIN:** Capsules • Ear Solution 0.5% • Intramuscular • Intravenous • Nasal Suspension with Hydrocortisone and Phenylpherine Ointment 3% • Ointment 3% with Hydrocortisone 2% • Ophthalmic Oil Suspension 1% • Ophthalmic Ointment 1% • Ophthalmic Ointment 1% with Hydrocortisone 1.5% • Ophthalmic Powder (Sterilized) • Oral Suspension • Pediatric Drops • PHARYNGETS® TROCHES Soluble Tablets • SPERSOIDS® Dispersible Powder • Surgical Powder (Sterilized) • Syrup • Tablets • Topical Spray • Troches

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**LEDERLE LABORATORIES,** a Division of **AMERICAN CYANAMID COMPANY,** Pearl River, New York

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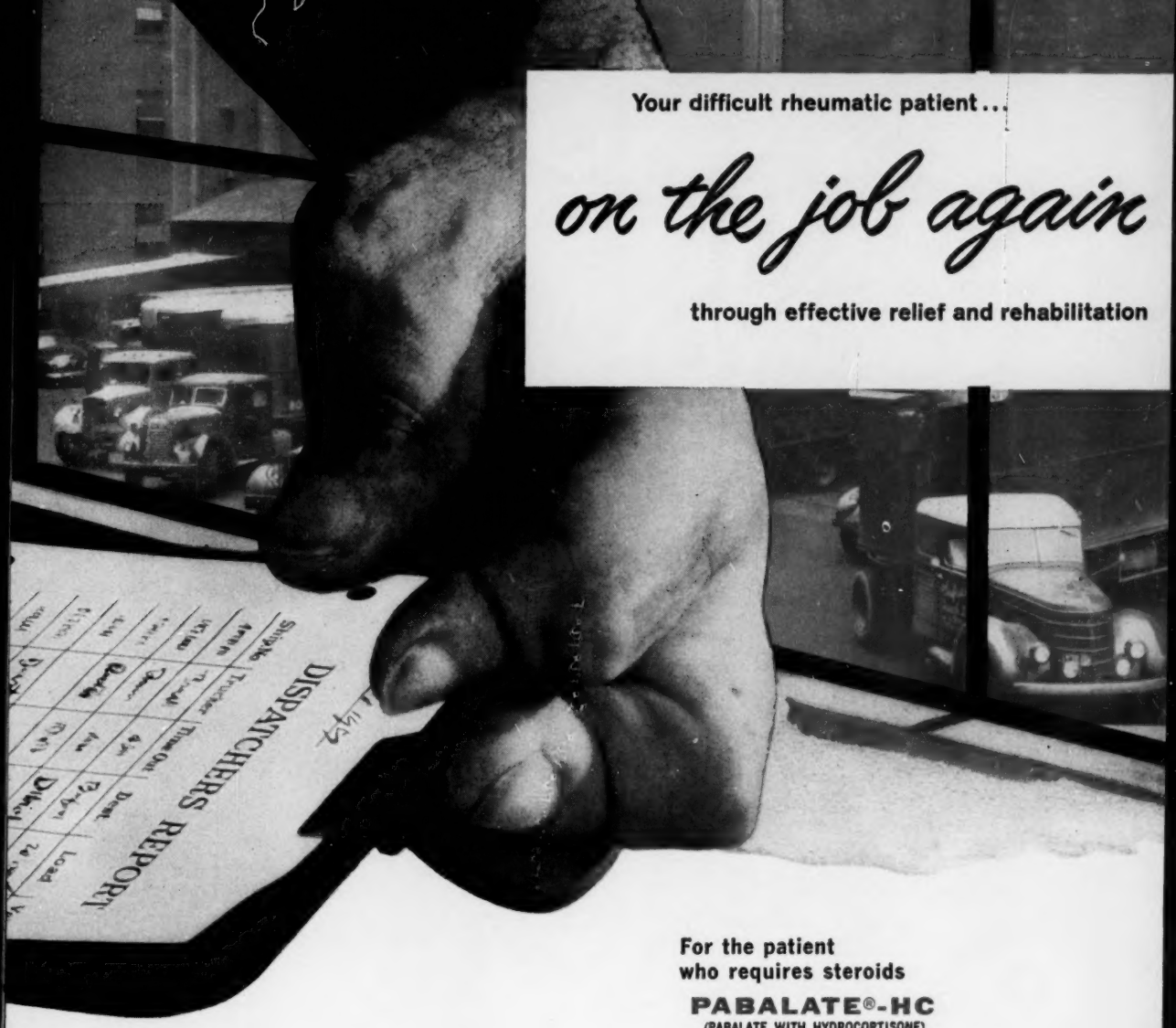



**Your difficult rheumatic patient...**

# *on the job again*

**through effective relief and rehabilitation**

**For the patient who does not require steroids**

## PABALATE®

Reciprocally acting nonsteroid antirheumatics . . . more effective than salicylate alone.

In each enteric-coated tablet:

Sodium salicylate U.S.P.....0.3 Gm. (5 gr.)
Sodium para-aminobenzoate .....0.3 Gm. (5 gr.)
Ascorbic acid .....50.0 mg.

**or for the patient who should avoid sodium**

## PABALATE®-Sodium Free

Pabalate, with sodium salts replaced by potassium salts.

In each enteric-coated tablet:

Potassium salicylate .....0.3 Gm. (5 gr.)
Potassium para-aminobenzoate .....0.3 Gm. (5 gr.)
Ascorbic acid .....50.0 mg.

**For the patient who requires steroids**

## PABALATE®-HC

(PABALATE WITH HYDROCORTISONE)

Comprehensive synergistic combination of steroid and nonsteroid antirheumatics... full hormone effects on low hormone dosage . . . satisfactory remission of rheumatic symptoms in 85% of patients tested.

In each enteric-coated tablet:

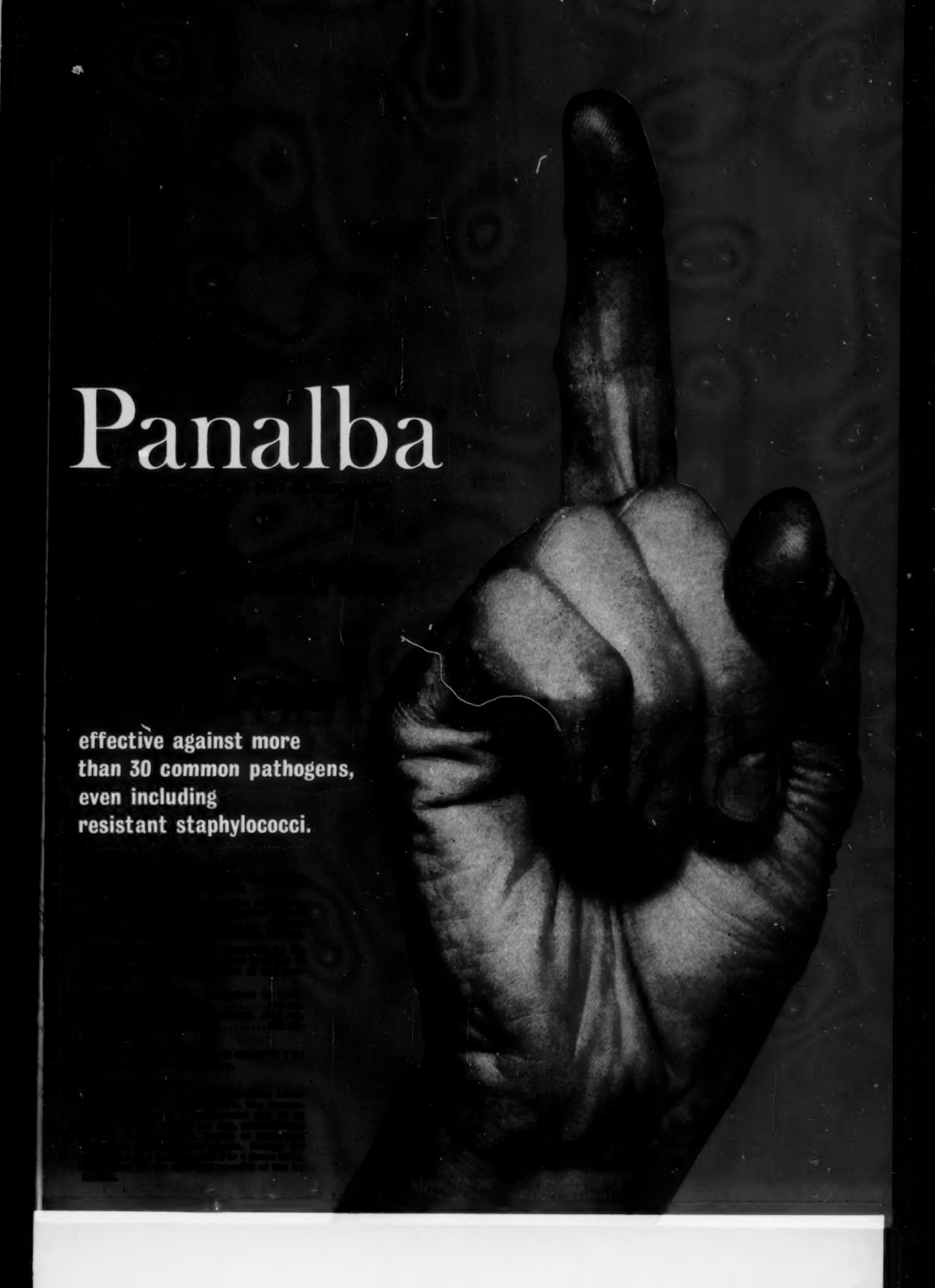
Hydrocortisone (alcohol) ..... 2.5 mg.
Potassium salicylate ..... 0.3 Gm.
Potassium para-aminobenzoate.. 0.3 Gm.
Ascorbic acid .....50.0 mg.

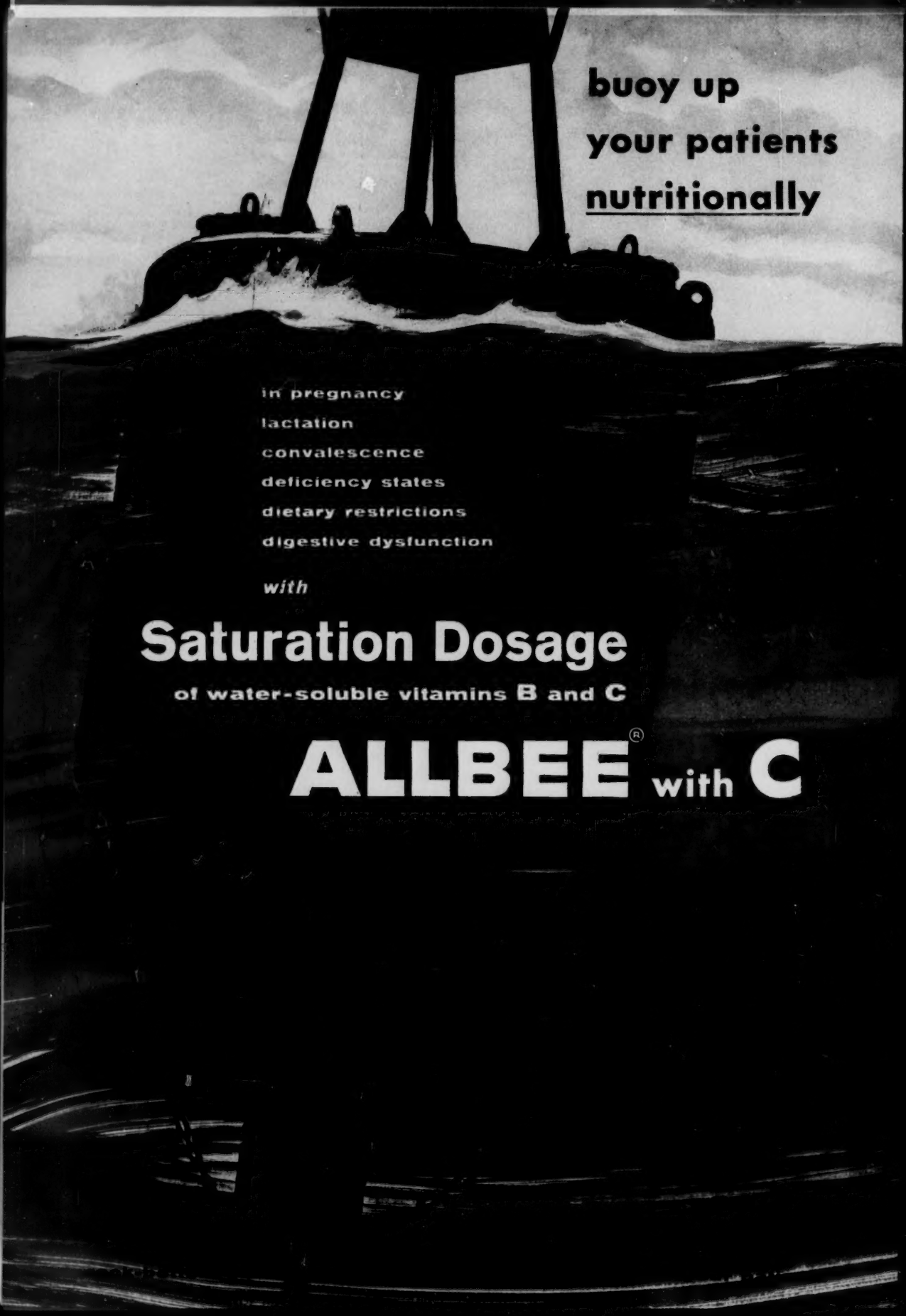
# PABALATE® Robins PABALATE®-HC

For steroid or non-steroid therapy: SAFE DEPENDABLE ECONOMICAL

A. H. ROBINS CO., INC., RICHMOND 20, VIRGINIA • Ethical Pharmaceuticals of Merit since 1878

# In potentially-serious infections...


Panalba
effective against more
than 30 common pathogens,
even including
resistant staphylococci.

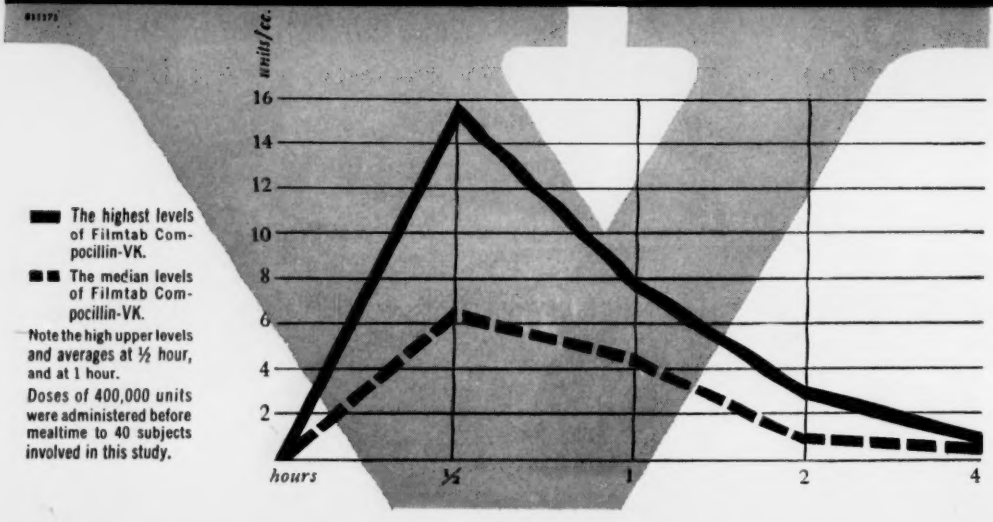

buoy up
your patients
nutritionally
in pregnancy
lactation
convalescence
deficiency states
dietary restrictions
digestive dysfunction
with
Saturation Dosage
of water-soluble vitamins B and C
ALLBEE® with C

"It is concluded that the addition of buffering agents to acetylsalicylic acid in the concentrations used serves no clinically detectable useful purpose."[1]

[1]Sadove, Max S. and Schwartz, Lester: An Evaluation of Buffered Versus Nonbuffered Acetylsalicylic Acid, Postgraduate Medicine; 24:183, August, 1958.

Nonbuffered Material Used—Bayer® Aspirin.

# Compoc

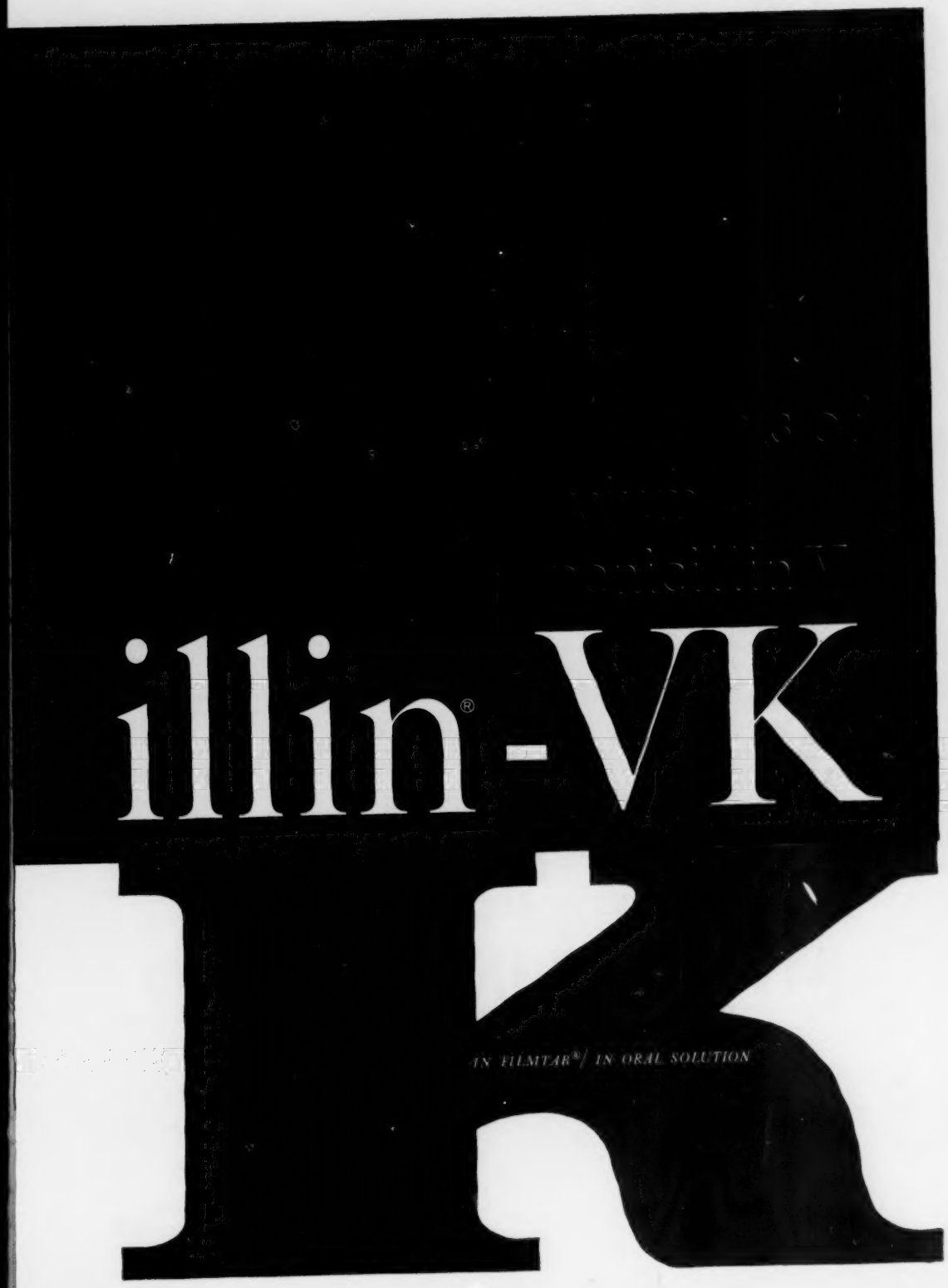



The highest levels of Filmtab Compocillin-VK.

The median levels of Filmtab Compocillin-VK.

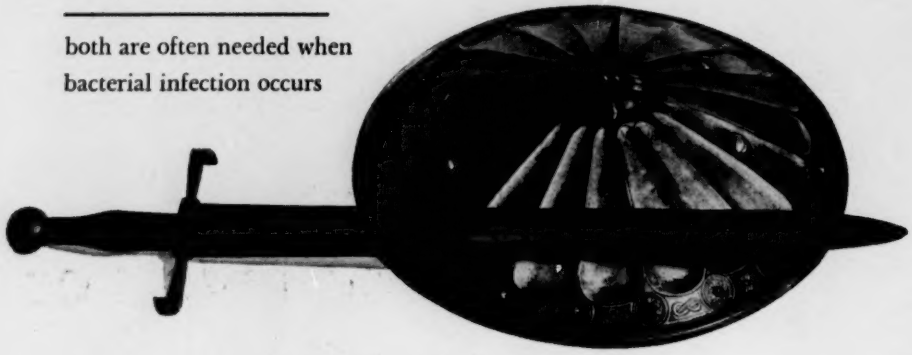
Note the high upper levels and averages at ½ hour, and at 1 hour.

Doses of 400,000 units were administered before mealtime to 40 subjects involved in this study.


illin®-VK
IN FILMTAB®/ IN ORAL SOLUTION

▪ prompt, aggressive
antibiotic action
▪ a reliable defense against
monilial complications

both are often needed when
bacterial infection occurs



## for a direct strike at infection
## Mysteclin-V contains tetracycline phosphate complex

It provides a direct strike at all tetracycline-susceptible organisms (most pathogenic bacteria, certain rickettsias, certain large viruses, and Endamoeba histolytica).

It provides the new chemical form of the world's most widely prescribed broad spectrum antibiotic.

It provides unsurpassed initial blood levels – higher and faster than older forms of tetracycline – for the most rapid transport of the antibiotic to the site of infection.

## for protection against monilial complications
## Mysteclin-V contains Mycostatin

It provides the antifungal antibiotic, first tested and clinically confirmed by Squibb, with specific action against Candida (Monilia) albicans.

It acts to prevent the monilial overgrowth which frequently occurs whenever tetracycline or any other broad-spectrum antibiotic is used.

It protects your patient against antibiotic-induced intestinal moniliasis and its complications, including vaginal and anogenital moniliasis, even potentially fatal systemic moniliasis.

# MYSTECLIN-V

**Squibb Tetracycline Phosphate Complex (Sumycin) and Nystatin (Mycostatin)**

Capsules *(250 mg./250,000 u.), bottles of 16 and 100.* Half-strength Capsules *(125 mg./125,000 u.), bottles of 16 and 100.* Suspension *(125 mg./125,000 u. per 5 cc.) 60 cc. bottles.* Pediatric Drops *(100 mg./100,000 u. per cc.). 10 cc. dropper bottles.*

SQUIBB *Squibb Quality – the Priceless Ingredient*

'MYSTECLIN'®, 'SUMYCIN'® AND 'MYCOSTATIN'® ARE SQUIBB TRADEMARKS

Relieve moderate or severe pain

Reduce fever

Alleviate the general malaise of upper respiratory infections

'TABLOID'

# 'EMPIRIN' COMPOUND®

WITH

# CODEINE PHOSPHATE*

maximum codeine analgesia/optimum antipyretic action

*Subject to Federal Narcotic Regulations

BURROUGHS WELLCOME & CO. (U.S.A.) INC., Tuckahoe, New York

## Symbols OF PROVEN PAIN RELIEF

gr. 1

gr. ½

gr. ¼

gr. ⅛

# *Formulas for dependable relief...*

*...from moderate to severe pain [illegible] restlessness.*

## 'CODEMPIRAL'® NO. 3*

[illegible] . . . . . gr. ¼
Phenobarbital . . . . . gr. ¼
Acetophenetidin . . . . . gr. 2½
Aspirin (Acetylsalicylic Acid) . . . . . gr. 3½

## 'CODEMPIRAL'® NO. 2*

[illegible] . . . . . gr. ¼
Phenobarbital . . . . . gr. ¼
Acetophenetidin . . . . . gr. 2½
Aspirin (Acetylsalicylic Acid) . . . . . gr. 3½

*...from pain of muscle and joint origin, simple headache, neuralgia, and the symptoms of the common cold.*

'TABLOID'

## 'EMPIRIN' COMPOUND®

Acetophenetidin . . . . . gr. 2½
Aspirin (Acetylsalicylic Acid) . . . . . gr. 3½
Caffeine . . . . . gr. ½

*...from mild pain complicated by tension and restlessness.*

## 'EMPIRAL'®

Phenobarbital . . . . . gr. ¼
Acetophenetidin . . . . . gr. 2½
Aspirin (Acetylsalicylic Acid) . . . . . gr. 3½

*Subject to Federal Narcotic Regulations

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**HOSPITAL, MEDICAL and SURGICAL**

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**INSURANCE CORPORATION**

300 St. Paul Place, Baltimore 2, Md.

# Investigator

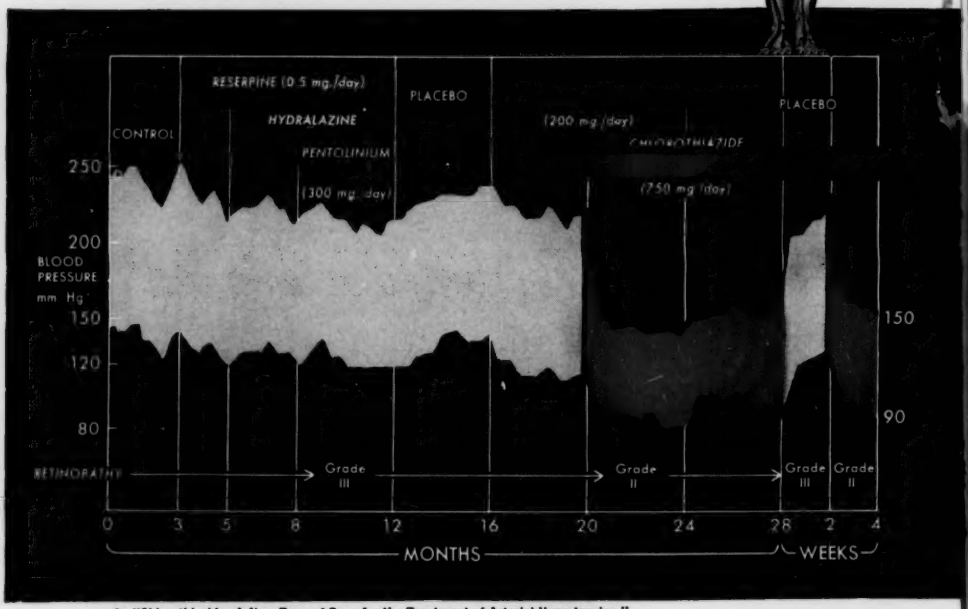
# after investigator reports

**Wilkins, R. W.: New England J. Med. 257:1026, Nov. 21, 1957.**

**"Chlorothiazide added to other antihypertensive drugs reduced the blood pressure in 19 of 23 hypertensive patients." "All of 11 hypertension subjects in whom splanchnicectomy had been performed had a striking blood pressure response to oral administration of chlorothiazide." ". . . it is not hypotensive in normotensive patients with congestive heart failure, in whom it is markedly diuretic; it is hypotensive in both compensated and decompensated hypertensive patients (in the former without congestive heart failure, it is not markedly diuretic, whereas in the latter in congestive heart failure, it is markedly diuretic). . . ."**

**Freis, E. D., Wanko, A., Wilson, I. H. and Parrish, A. E.: J.A.M.A. 166:137, Jan. 11, 1958.**

**"Chlorothiazide (maintenance dose, 0.5 Gm. twice daily) added to the regimen of 73 ambulatory hypertensive patients who were receiving other antihypertensive drugs as well caused an additional reduction [16%] of blood pressure." "The advantages of chlorothiazide were (1) significant antihypertensive effect in a high percentage of patients, particularly when combined with other agents, (2) absence of significant side effects or toxicity in the dosages used, (3) absence of tolerance (at least thus far), and (4) effectiveness with simple 'rule of thumb' oral dosage schedules."**




In "Chlorothiazide: A New Type of Drug for the Treatment of Arterial Hypertension,"
Hollander, W. and Wilkins, R. W.: Boston Med. Quart. 8: 1, September, 1957.

**MERCK SHARP & DOHME** Division of MERCK & CO., INC., Philadelphia 1, Pa. MSD

# the effectiveness of 'DIURIL' (CHLOROTHIAZIDE) in Hypertension

## *as simple as 1-2-3*

**1 INITIATE THERAPY WITH 'DIURIL'.** 'DIURIL' is given in a dosage range of from 250 mg. twice a day to 500 mg. three times a day.

**2 ADJUST DOSAGE OF OTHER AGENTS.** The dosage of other antihypertensive medication (reserpine, veratrum, hydralazine, etc.) is adjusted as indicated by patient response. If the patient is established on a ganglionic blocking agent (e.g., 'INVERSINE') this should be continued, but the total daily dose should be immediately reduced by as much as 25 to 50 per cent. This will reduce the serious side effects often observed with ganglionic blockade.

**3 ADJUST DOSAGE OF ALL MEDICATION.** The patient must be frequently observed and careful adjustment of all agents should be made to determine optimal maintenance dosage.

**SUPPLIED:** 250 mg. and 500 mg. scored tablets 'DIURIL' (chlorothiazide); bottles of 100 and 1,000.

'DIURIL' is a trade-mark of Merck & Co., Inc.

Smooth, more trouble-free management of hypertension with 'DIURIL'

When a Doctor Needs a Doctor . . .

He Needs INCOME PROTECTION Too!

When you are disabled by sickness or accident, chances are your professional income **stops.** You have no boss to carry you on the payroll. . . no 30-day sick leave. . . no Workmen's Compensation.

Your best protection against that kind of financial disaster is a plan of emergency **income protection.** Mutual of Omaha has exactly the kind of protection you need, in the new, low-cost PROFESSIONAL MEN'S PLAN. It assures you of a regular emergency income — as long as you are totally disabled by accident or sickness covered by the plan. . . for weeks, months, or even for LIFE!

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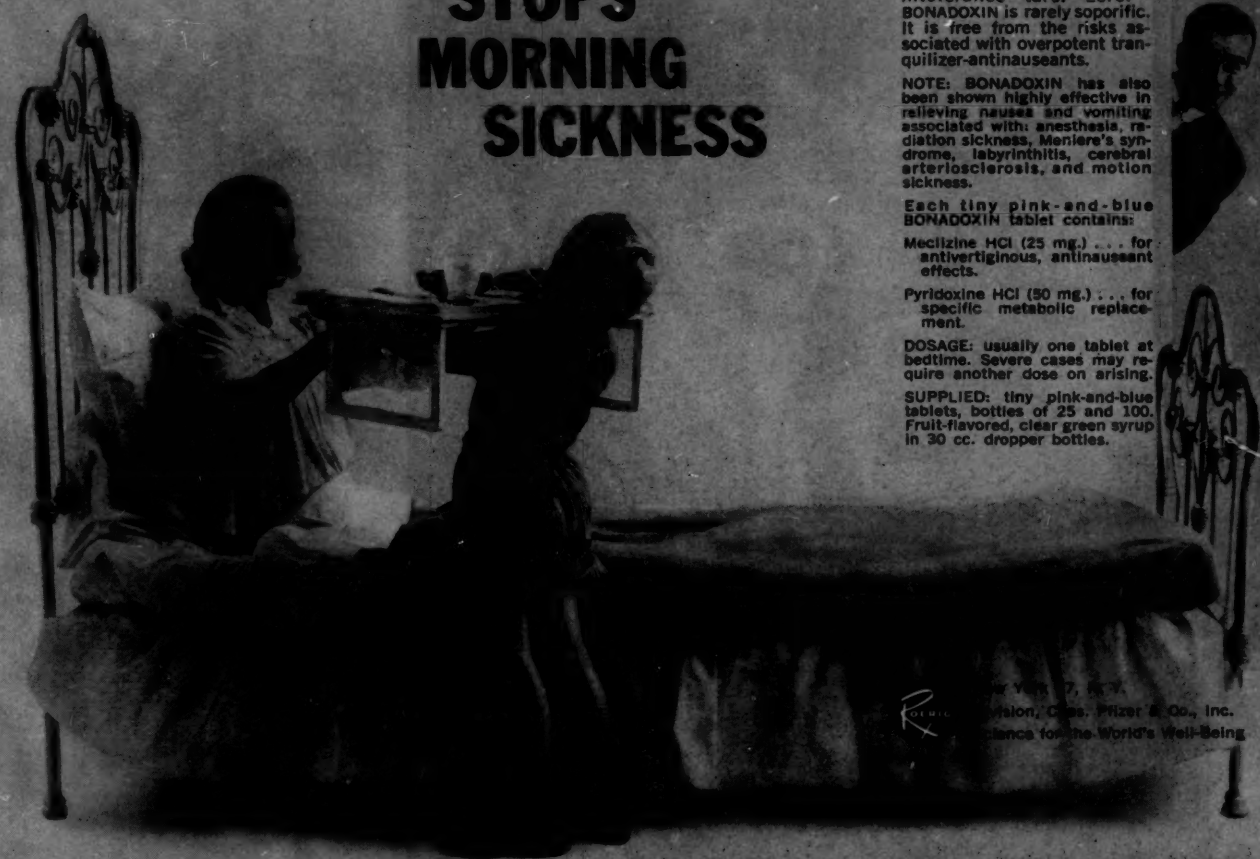

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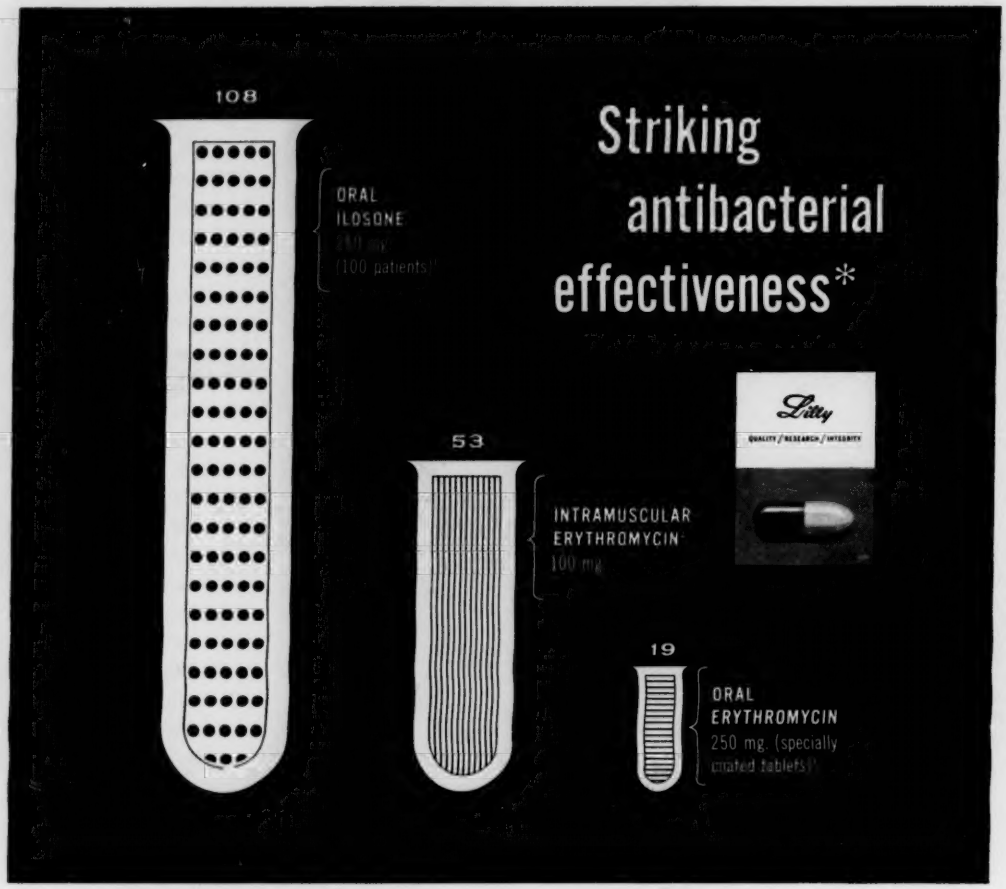


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# SYMPOSIUM ON TRAUMA

## The Epidemiology of Trauma

CHARLES M. CAMERON, JR., M.D., M.P.H.

CHAPEL HILL

The specter of mass disaster which might follow in the wake of an overt enemy attack or a catastrophic storm is indeed staggering and not only presents a challenge to the medical profession, but might also serve to test the basic resources for survival of our nation.

To a very great extent, however, mass disaster already is with us in the form of the accidents and violence which claim the lives of thousands each year and cause the injury and crippling of countless others. That this tragic decimation of America's human resources has largely escaped notice can be traced to several factors.

First is the fact that, instead of occurring in the seconds following the explosion of a thermonuclear weapon, or in the minutes or hours following the impact of an earthquake, hurricane, or tornado, these disasters are scattered throughout the year, so that the impact of accidental trauma on the population rarely is felt by any single community or any single physician.

Second, much accidental trauma occurs in the home, on the farm, and in such a setting and in such a fashion that it rarely captures human imagination, interest, and sympathy to the extent that a single catastrophic event would.

Third, the full impact of the burden of trauma on the population might not be fully recorded in any single place at any given time. Many accidents are never recorded in any central agency unless they immediately result in death or perhaps involve some violation of the law. It is true that mortality data is collected annually and widely distributed, but the phenomenon of mass death loses much of its terrifying impact when reduced to cold impersonal statistics.

Last, but by no means least, the problem of accidents has developed slowly with the evolution of technology. For example, accidents with fire undoubtedly have been accepted as part of the normal risk of using fire for centuries. In more recent times, the motor vehicle accident has developed with the motor vehicle. As an accompaniment of progress, accidents have been accepted as part of the normal order of things, and, indeed, there are those who regard accidents as inevitable and by no means amenable to preventive techniques.

### *Total Impact of Accidents*

If the annual number of accidental deaths in North Carolina alone would occur in any single day, in any single community in the United States, the loss of life would cause it to be listed as the second most serious "major disaster" ever recorded in this country. (The most serious single disaster ever recorded in the United States was the loss of 6,000 lives in the Galveston, Texas, tidal wave on September 8, 1900. The next most serious was the Johnstown flood in May, 1889, when 2,209 persons lost their lives.)[1] (See table 1) Thus it may be said that at this moment mass disaster is occurring day by day, a little at a time, throughout the state.

Presented before the Section on Surgery, Medical Society of the State of North Carolina, Asheville, May 6, 1958.

*Associate Professor, University of North Carolina School of Public Health, Chapel Hill, and Safety Consultant, Accident Prevention Section, North Carolina State Board of Health, Raleigh.

**Table 1**
**Deaths in Major Disasters Compared to Annual Accident Deaths in North Carolina**

| Disaster | Deaths |
|---|---|
| Galveston, (Texas) Tidal Wave Sept. 8, 1900 | 6000 |
| TOTAL ANNUAL ACCIDENT DEATHS, NORTH CAROLINA, 1956 | 2412 |
| Johnstown, (Pa.) flood, May 31, 1889 | 2209 |
| Florida hurricane, Sept. 16-17, 1928 | 1833 |
| "Titanic" Struck Iceberg, Atlantic Ocean, April 15, 1912 | 1517 |
| "Sultana" exploded, Mississippi River, April 27, 1865 | 1405 |
| Peshtigo (Wisc.) and Surrounding Area Fire, Oct. 9, 1871 | 1152 |
| "General Slocum" burned, East River, June 15, 1904 | 1021 |

Source: Accident Facts, 1957 Edition, National Safety Council, Chicago, Illinois, p. 21.

*Compilation of data*

The recorded picture of the total impact of accidents and violence upon the health of the population of North Carolina is by no means complete. Those accidents and acts of violence which result in the death of the victim are accurately recorded through the tabulations of the death certificate data maintained by the North Carolina State Board of Health. Although the death certificate provides minimal information about the accident or event, the picture of the actual circumstances surrounding it is only fragmentary. Those accidents and other acts of violence which occur in violation of some law usually are recorded, but not necessarily by those with a primary interest in health and medical matters. Records of the police and the highway patrol reflect information about murder, suicide, assault, and fatal and nonfatal accidents which occur on the streets and highways.

Industrial accidents are duly recorded by the North Carolina Industrial Commission because of the factor of workmen's compensation in many of these instances.

For the remainder of the picture, it is necessary to look to a variety of agencies and individuals in the state and collect the small bits of the puzzle which, when combined with other sources of information, give a more or less complete picture of the epidemiology of trauma in the state. Some of these other sources include the records of the Crippled Children's Program, hospital records, the reports of the Vocational Rehabilitation program, the Commission for the Blind, and results of the various specialized surveys completed in this state and elsewhere[2].

**Table 2**
**Deaths from Accidents and Violence in North Carolina, 1956**

| | |
|---|---|
| Accidental deaths | 2,453 |
| Motor vehicle | 1,164 |
| Home and Farm | 784 |
| Other | 505 |
| Violence | 701 |
| Suicide | 389 |
| Assault | 312 |
| Total lives lost | 3,122 |

Source: Annual Report of Public Health Statistics Section, North Carolina State Board of Health, 1956, Part 2.

One interesting piece was added to this puzzle recently when the Bureau of Medical Economic Research of the American Medical Association reported the results of a study to determine the accident burden on hospitals. Based on results from general hospitals, the A.M.A. estimates that accidents consume from 6 to 8 per cent of the available personnel and facilities of America's hospitals[3].

Accidents and violence can be considered and studied epidemiologically in terms of those events which result in death, injury, and permanent disability.

*Mortality*

In North Carolina, in 1956, accidents and violence resulted in the deaths of 3,122 persons. This category was the third leading cause of death in the state that year, exceeded only by diseases of the heart and blood vessels and by cancer and other malignancies. When causes of death are considered in terms of age groups, this category was the leading cause of death for all persons between the ages of 1 and 35 years, and led all other causes in terms of years of productive working life lost to the economy of the state.

Of these 3,122 deaths, 701 were the result of homicide, assault or suicide, 1,164 the result of motor vehicle accidents, and 1,257 the result of home and farm accidents, industrial accidents, and others[4].

While there is a general tendency among health and safety specialists to classify these events under a single heading, such an arbitrary grouping is completely artificial since there are major differences between homicides and accidents, for example, and between motor vehicle accidents

and home accidents. In reality, we are considering a group of related, but separate, clinical entities which must be studied as distinct diseases in order to define their unique epidemiologic patterns.

*Deaths from homicidal attempts and assault*

A total of 312 deaths were recorded under this category in 1956. Seventy per cent of the victims were non-whites and 30 per cent were white. Two thirds of the white homicides and three fourths of the non-white homicides claimed male victims. Victims of assault were commonly adults, with the highest death rates occurring among persons from 25 to 44 years of age. In this age group homicide and assault were the seventh leading cause of death among white residents and the second leading cause of death among non-white residents of the state. Three out of four of these deaths were among rural residents who experienced only 2 out of 3 of the remaining deaths from all causes that same year. The firearm is still the favorite weapon in fatal assaults in this state, having been used in 60 per cent of recorded deaths.

*Suicides*

Suicides outnumbered homicides in North Carolina in 1956, claiming the lives of 389 persons. Here the picture is different in that more than 90 per cent of the suicides were committed by members of the white race. Again, males predominated, accounting for 82 per cent of all successful suicides. Suicide also is a phenomenon which characteristically involves adults, but in contrast to homicide it includes not only those in the 25 to 44 year group, but is almost as common in the 45 to 64 year group. There is no evidence that a disproportionate number of suicides are found among city dwellers in North Carolina. The method of self-destruction most frequently used was the firearm, with hanging and poison ranking next in order.

*Deaths from accidents*

The remaining 2,453 deaths in this general category are attributable to accidents. Forty-eight per cent of these were due to the motor vehicle mishaps and 52 per cent to other causes. Analysis shows that next to motor vehicle accidents, accidents in the home and on the farm are the most important, claiming the lives of more than 800 persons in a typical year in North Carolina. The remaining 450 accidental deaths occur in industry, in parks or recreational areas, or involve other methods of transportation such as the train or plane. The leading type of accident in this category would be classed as recreational, with drowning as the most commonly observed.

In general, accidental death rates are twice as high among non-whites in North Carolina as among whites, and for certain types of accidents such as drownings and death from fires, the non-white mortality is much higher than the white. The male liability here also is excessive, with male deaths outnumbering female deaths about two to one.

*Relationship Between Accidents and Age*

The impact of accidents on the various age groups of the population is also of interest. The greatest numbers of accidental deaths are recorded among the older people. Because these also are the years during which the other forces of mortality are greatest, the unusually high fatal accident experience of the senior age groups has been largely overlooked[5]. In the earlier years of life, the actual numbers of accidental deaths are lower, as are the death rates, but since all death rates generally are lower in children and young adults, the accident experience assumes much greater prominence. By adapting the techniques used in studying the natural history of diseases to accidents, it has been possible to describe quite typical accident syndromes involving the various age groups of the population.

Among infants and children the most typical accident is likely to occur in the home, since it is in this environment that they spend the greater part of their time. Common fatal accidents among children are caused by poisonous agents of various types, the various foreign bodies involved in strangulation as well as fire, drowning, and mishaps involving firearms. As the child grows into adulthood, the greatest potential for accidental deaths lies in the essential mobility of the population, and here the motor vehicle makes its greatest impact. Although those of non-driving age are killed as pedestrians, the majority of accidental deaths from the motor vehicle involve those of driving age. That the acci-

dent rate of the young adult driver is higher than that of the middle and late adult life has been well documented in various studies.

During the adult years there is also a potential for death in industrial or occupational accidents, but the progress made in recent years in the control of occupational mishaps has made this type of accident relatively less important. In a typical year in North Carolina, the Industrial Commission records from 125 to 150 accidental deaths among the labor force of the state, with about 25 per cent of these resulting from motor vehicle accidents of commercial drivers. Possible exception to the relative importance of occupational accidents involves those employed in agriculture, whose accident experience is rarely recorded by those agencies administering Workmen's Compensation plans. In terms of numbers of accidental deaths, the agricultural workers experience the greatest total of any single group in the United States.

In the late middle adult years and continuing past 65, the relative importance of motor vehicle accidents and industrial accidents decreases, and again those mishaps which occur at home attain importance. Commonest fatal accident among oldsters in North Carolina is caused by falls, with fires, trauma from falling objects, and others of less importance[6].

*Other Factors*

In addition to an age relationship, it has been possible to delineate in a superficial manner certain other relationships in association with accident fatalities. Although accident susceptibility is probably uniformly scattered throughout the population, there is evidence of increased susceptibility to accidents on the part of some individuals in certain sets of circumstances. It has been noted that accidental death resulting from fire in which the entire dwelling is destroyed is more apt to occur among those living under less favorable economic circumstances. Where studied, those residences with non-central heating appliances such as oil or kerosene burning stoves seem to be frequently involved in the complex of death from fire. Earlier studies in North Carolina have suggested that the residents of rural areas in the state bear an unequal share of the burden of fatalities from home and farm accidents[7].

Table 3
**Estimated Percentages of Deaths and Injuries from Accidents**

| Type of Accident | Percent of Accidental Deaths* | Percent of Accidental Injuries** |
|---|---|---|
| All accidents | 100 | 100 |
| Motor vehicle | 42 | 8.6 |
| Home | 30 | 44.3 |
| Work | 15 | 17.1 |
| Other | 13 | 30.0 |

Source:
*From Accident Facts, 1957 Edition.
**From unpublished finding, National Morbidity Survey, Reproduced by Accident Prevention Program. U. S. Public Health Service, Washington, D. C.

*Injuries Resulting From Accidents*

The epidemiologic pattern of accidental injury in North Carolina is less complete than that of accidental death, largely due to the lack of a centralized agency collecting data on all accidental injuries in the state. Some workers have suggested that injury patterns follow fatality patterns with reference to age, sex, and racial characteristics. Certain localized studies in other parts of the country would seem to challenge this. In addition, an as yet unpublished finding of the National Morbidity Survey which included data from North Carolina shows that, while accident fatalities most commonly occur on the highway, accidental injury most commonly occurs in the home. While 42 per cent of accidental deaths involve the motor vehicle, motor vehicle accidents were responsible for only 8.5 per cent of total accident injuries. Home and farm accidents account for about one third of all accidental deaths, but have been shown to be responsible for more than 44 per cent of all accidental injuries[8].

There has also been some disagreement as to the total number of accidental injuries in the population. The most widely quoted figure is that offered by the National Safety Council, which estimates that each community will experience from 100 to 200 nonfatal accidents for each recorded accident fatality. Calculations based on the estimate derived from the National Morbidity Survey, which will be reported in some detail in the next few months, would indicate that a more accurate estimate would place the figure at closer to 600 accidental injuries for each recorded accident

fatality. By definition, the survey recorded only those injuries serious enough to require medical attention or to interfere with usual activities of the patient for at least one day.

The types of accidents resulting in injury are also likely to differ. Studies in Georgia and elsewhere have indicated that the injuries may be increasing under the stimulus of the mechanical age. Injuries resulting from accidents with power lawn mowers, power used in home workshops, and household appliances with moving parts may be on the increase. Lacerations, contusions, soft-tissue injury, and bone and joint trauma may well be on the increase. The accident potential in leisure time activities such as sports and hobbies has been reviewed, and here again the opportunities not only for mechanical injury, but also for chemical injury of various types seem multiple[9].

*Permanent disability*

Here again only fragmentary records are available, but last year in the Crippled Children's Clinics throughout the state more than 800 children received services because of permanent disabilities resulting from accidents, burns being the most commonly observed etiologic agent. During this same period about 1,400 children were receiving care as a result of the after-effects of poliomyelitis, so here perhaps is some basis for comparison of the relative seriousness. This would seem to assign to accident prevention among children a priority which it has not received in many circles.

Records from the North Carolina Vocational Rehabilitation Department list disabilities resulting from accidents as the single cause most frequently given as the crippling agent qualifying the patient to receive this service.

Estimates place at between 5 and 15 per cent the number of blind persons who can trace their blindness to accidental trauma of eye. Beyond this point the trail of suffering and disability resulting from accidents becomes less clear. One hospital for example, the North Carolina Orthopedic Hospital in Gastonia, over a 30-year period treated 457 children ranging in age from 6 months to 16 years for contractures due to burns or from the results of unsuccessful skin grafting[10].

*Conclusion*

While the pattern of death, injury, and disability from accidents is fragmentary from the point of view of data recorded in the literature and in the archives of vital records in the state, there is little doubt that in the files of the surgeons of the state and in the record rooms of the hospitals and clinics there is ample documentation of the seriousness of what many have called "North Carolina's most serious epidemic health condition."

The need for medical leadership, not only in providing treatment for the victims of accidents and violence, but also in taking the initiative in programs of accident prevention would seem imperative[11]. The interest of the surgeons of North Carolina in this problem is most encouraging and holds promise of adding yet another vital influence to the safety resources of the state.

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* * *

# Principles of Management of the Severely Injured Patient

RICHARD T. MYERS, M.D.*

WINSTON-SALEM

We are witnessing a continuing epidemic in the United States, involving ten million persons annually, resulting in death and disability greater than any previous war, and producing an almost inconceivable toll of suffering—physical, mental, and economic. The naked facts of the trauma in North Carolina have been revealed to you in the excellent presentation by Dr. Cameron. It is obvious that there is a pressing need for greater awareness, equally on the part of the general population and of the medical profession, of the havoc resulting from injury. The American College of Surgeons has had a committee on trauma for 36 years, and some gauge of its interest and efforts in this regard are reflected in its growth from 18 to 3,000 members. Committees have been formed by legal bodies at national, state and local levels, with the purpose of exerting control on this epidemic. Private sources have instituted research into some of the more lethal etiologic agents in injury such as the automobile. Civil defense has met with varying success in organizing the entire nation to deal with mass casualties. The American Red Cross continues diligently in its educational activity relating to trauma.

Nonetheless there is considerable discrepancy between what is being accomplished and what is required in this raging epidemic. We can hope that by understanding the epidemiology of injury we may employ preventive measures effectively. We pray even more earnestly that, in some way, suitable control can be exerted by mankind to prevent the unleashing of thermonuclear weapons which have already accumulated in quantity sufficient to decimate the human race.

As of this moment, however, accidents related to the home, automobile and industry are out of control, and the threat of near annihilation from thermonuclear war is all too real. Until more progress can be made along preventive lines, we must concentrate on the most effective way of treating the injured and realistically plan to handle an inconceivable number of casualties.

The purpose of this paper, therefore, is to outline briefly the principles of treatment of the severely injured as seen in civilian practice today, and to comment briefly on the surgeon's role in mass disasters. The scope of this presentation is limited to the early emergency care of the severely injured, leaving the more definitive aspects to subsequent speakers

### *Management of Immediate Crises*

It is generally recognized that the management of the severely injured patient is best accomplished through a team effort, inasmuch as he often has multiple injuries. The general surgeon frequently finds himself the coordinator of this team, for he commonly sees the patient first. Often the injury or injuries may fall completely within his domain, and the coordination here is a matter of dealing with the priorities of wounds within his own field. Just as often there are multiple wounds, and consultation must be sought from the neurosurgeon, genitourinary surgeon, thoracic and plastic surgeons, the orthopedist, the otolaryngologist, and so forth. Nevertheless the importance of an individual, regardless of his specialty, with the concept of the care of the whole patient, to assess, record and direct treatment cannot be overemphasized.

In the severely injured patient, the immediate control of external hemorrhage and correction of respiratory embarrassment takes precedence over anything else. Quite often, if these two extreme situations cannot be handled simultaneously with adequate help, it is a matter of fine judgment as to which must be managed first.

### *Hemorrhage*

The control of external hemorrhage is dictated by the circumstances. A pressure

*From the Department of Surgery, Bowman Gray School of Medicine, Wake Forest College, Winston-Salem, N. C.

dressing properly applied will control capillary ooze and venous, small arterial, and arteriolar bleeding. Immobilization of a badly injured and fractured extremity will reduce blood loss. In the badly mangled, partially amputated extremity, open blood vessels may be clamped and ligated. Control by clamp and ligature should be avoided, however, in larger arteries which may be subject to repair in order to restore continuity of the vessel. Tourniquets should be used only if bleeding cannot be controlled by the above mentioned methods and, even then, for as short a period of time as possible. The presence of internal hemorrhage in the abdomen and chest, though not usually obvious until response to shock therapy has been observed, may require high priority.

*Respiratory embarrassment*

The management of respiratory embarrassment requires the consideration of four situations, roughly in this order: The obstructed airway must be cleared by simple positioning of the head and neck, and nasopharyngeal or intratracheal aspiration. Tracheostomy is frequently necessary and should be done without delay, especially in trauma to the head, neck and face, and in chest injuries producing an unstable thorax and injury to the lungs or both. It may be immediately life saving by providing an airway, and will enhance chances of survival in such conditions as mentioned, where reduction of dead space and tracheal toilet are vital for several days following injury. Tracheostomy is easily and quickly executed. The head is extended to the maximum degree tolerated by the patient and consistent with his condition. A mid-line incision is made from the cricoid cartilage to the suprasternal notch. The strap muscles are divided by blunt dissection and the trachea exposed below the thyroid isthmus. Two tracheal rings are incised, and the largest cannula comfortably fitting the trachea is inserted. Bleeding is minimal, and no sutures are required. A loose packing around the cannula supports the tracheotomy tube and prevents the development of subcutaneous and mediastinal emphysema.

The open thoracic wound, or so-called "sucking wound," requires immediate care to restore respiratory effectiveness. In such a wound the inspiratory efforts are neutralized by inhalation of air through the wound rather than through the upper respiratory tract, with resultant hypoxia. This situation is further compounded by mediastinal instability, and, if there is easier ingress than egress of air through the wound, a tension pneumothorax with shifting mediastinum will result. The application of an airtight pressure dressing will quickly alleviate such a situation.

If there is tension pneumothorax associated with the open thoracic wound or in the closed chest wound by virtue of fractured ribs penetrating pulmonary substance, this also requires immediate therapy. It may be treated by thoracentesis or a needle flutter valve. It is best handled by the introduction of a catheter through an inter-rib trocar connected to an underwater seal so that neutral or negative pressure may be restored to the thorax. Such an arrangement also allows the removal of fluid and blood which may have accumulated to aggravate the tension pneumothorax.

In multiple rib fractures, the resulting flail chest reduces the effectiveness of respiration. Some form of immobilization is mandatory, and may be accomplished by the use of sandbags or a pressure dressing utilizing a chest binder. Traction utilizing towel clips to grasp the ribs or steel wire supporting the flail rib has been utilized for this purpose, but these procedures are time-consuming and in our experience not as effective as the simpler methods mentioned previously. Such an apparatus or internal fixation of flail ribs probably are best considered later in the management of the patient after the emergency no longer exists. Oxygen administered by nasal tube is indicated in all patients with respiratory embarrassment.

*Restoration of Circulating Blood Volume*

The control of hemorrhage and respiratory embarrassment allows one to proceed more leisurely, but without delay, in the further management and evaluation of the patient. Next in order of priority comes the restoration of circulating blood volume to combat existing or imminent peripheral circulatory collapse present in all severely injured patients. A blood sample should be drawn for cross-matching, hematocrit determination and complete blood count. A cut-down should then be done in an available vein in an extremity furthest from the

site of injury to prevent loss of blood into an area of great tissue damage. A polyethylene catheter at least large enough to accomodate an 18 gauge needle should be placed within the vein, and, until blood is available, an infusion of saline should be started.

Blood has no peer in the treatment of any form of traumatic shock, and plasma and plasma expanders are to be used only when blood is not available or until it can be obtained. The polyethylene cut-down is quite advantageous in the shock patient with collapsed peripheral veins, because of its dependability in the administration of blood and fluid, as the patient has to be moved to the x-ray department and to the operating room. The rate of infusion may be increased by utilizing the many available pressure methods, and occasionally the intra-arterial route is necessary. An indwelling urethral catheter should be placed for continuing accurate follow-up of urinary output and for the immediate urinalysis and gross examination of the urine. This is extremely important in patients with peripheral circulatory collapse and in those with significant burns. It also gives early information regarding the genitourinary tract, and is necessary for confirming the diagnosis of ruptured bladder. All severely injured patients should have a nasogastric tube passed into the stomach for diagnostic purposes and for emptying the stomach prior to probable general anesthesia.

*Further Examination and Diagnosis*

At this point it is possible to complete a thorough physical examination of the patient. This should be done with dispatch and gentleness, with all the patient's clothing removed. Here as always the rectal and pelvic examinations should not be deferred. It is only through the thorough physical examination that required additional studies can be done in order that definitive therapy might be carried out. At this time also major fractures should be splinted in anticipation of moving the patient. Opiates in the smallest effective dose may now be safely given. Tetanus prophylactics and antibiotics should now be administered. Penicillin in dosage of 4 to 600,000 units and streptomycin in dosage of 0.5 to 1 Gm. is perhaps the best antibiotic combination to use in such situations as a preventive measure. If it is known that the patient has had active immunization against tetanus, a booster dose of toxoid should be administered. If there is any doubt, he should be given from 1,500 to 10,000 units of tetanus antitoxin after appropriate testing for sensitivity. In the presence of a massive wound likely to be contaminated with tetanus organisms, a wound that is more than 24 hours old, massive hemorrhage, or prolonged shock, and if more than four years have elapsed since the last booster dose of toxoid, the patient should receive in addition to a tetanus toxoid booster, tetanus antitoxin given at a separate site after negative sensitivity tests. At the present time polyvalent gas gangrene antitoxins are ineffective for prophylaxis, and the best preventive against gas gangrene is early and adequate wound debridement and prevention of infection.

After these measures have been taken, the patient may be studied by additional techniques, such as x-ray, for further refinements in diagnosis.

An attempt has been made in this paper to indicate certain principles in the early management of the severely injured. In the process, a loose framework has been set up within which any severely injured patient might be handled in the resuscitative phase and priority assigned to certain types of wounds. Subsequent priority in management depends upon the physiologic severity of the wounds. The literature contains lists of priorities for various types of wounds set down categorically. There is uniform agreement regarding the management of uncontrolled hemorrhage and respiratory embarrassment. Thereafter penetrating wounds of the abdomen, spinal cord and cranial injury, significant burns, penetrating chest wounds, extensive soft tissue wounds, and others are ranked at various levels.

The difficulties in setting down a single priority list are apparent. It would seem that although such a priority list is arbitrary, it may be useful as a guide to the inexperienced and to the experienced making decisions under stress. In the final analysis the surgeon responsible for determining priority must evaluate a patient on the basis of the physiologic effect of the wound. For example, patients with penetrating wounds of the abdomen occupy a high priority. If this is the only wound, then it is a simple matter to determine that

the patient should be operated upon as soon as shock can be corrected. If, on the other hand, a hypothetical patient has a skull fracture with hemorrhage from the middle meningeal artery in association with a penetrating wound of the abdomen, it is obvious that the expanding hematoma within the cranium has a more immediate physiologic effect than the penetrating wound of the abdomen. It would therefore follow that the hematoma should be evacuated and bleeding controlled within the cranium, followed as soon as possible by laparotomy for the penetrating wound of the abdomen.

*Priorities in Mass Casualties*

Thus far we have dealt with priorities within a given patient. We have been asked to comment briefly on triage and priorities in situations involving large numbers of casualties. The basic principles are the same whether one is dealing with one severely injured patient or with many. Differences and modifications arise only when the work load exceeds the available manpower.

One severely injured patient may be taxing to the many persons required to render good treatment. The hospitals and physicians have been equipped by the constant flow of the injured to absorb the demand in time, effort and disruption of orderliness created by such situation. Constant exposure to the problem has evolved a plan of management of a reasonable number of such injuries properly spaced. Such therapy for the most part is good. In some instances it needs to be improved.

Few institutions have adequate and realistic plans for handling mass casualties. Such planning is urgently necessary, and elsewhere in this meeting this aspect of the problem has been expertly outlined. The surgeon's place in the plan is that of the sorting officer, and, as such, he will be responsible for properly directing the efforts of other physicians who may not be surgically trained in the therapy of the injured. He must assume the grave responsibility of assessing the work load and available manpower, and, working within the framework of priorities suggested herein, attempt to the best of his ability to see that the greatest good comes to the greatest number. Without an adequate plan this is totally impossible. With one he may justify flexibility (not compromise) in providing the best yield in a catastrophic situation.

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# Principles of Management of Soft Tissue Trauma

ALFRED T. HAMILTON, M.D., F.A.C.S.

RALEIGH

I should like to preface my remarks by saying that, as in all medicine, the vital management of the injured patient comes first, and that while we may take advantage of that period of vital control for minor procedures, one's preoccupation should be with the saving of life. It should go without saying, but still requires stressing, that major procedures should be deferred until injuries in other areas have been assessed, their vital implications considered and managed, and, above all, shock and hemorrhage have been controlled.

*Elementary Principles*

Assuming that these emergencies have been properly managed, certain elementary principles apply to all soft tissue surgery. Unfortunately, like all elementary principles, they tend under stress to be disregarded. These principles are aseptic technique, proper cleansing and debridement of the wound, the obliteration of dead space, drainage where indicated, hemostasis as meticulous as possible, the reapposition of severed structures where feasible, and layer closure, along with prevention of anaerobic and other infections by the use of antitoxin and antibiotics.

As regards specific soft tissue elements, the following procedures should be carried out:

1. Arteries should be, where severed, ligated above and below with their veins where collaterals are evident or can be

expected. Where the severed artery appears crucial to peripheral salvage and a replacement graft is feasible, this procedure should be undertaken.

2. Nerves which can be reapposed should be sutured primarily with a fine neurilemma sheath suture. In the event of later necessity for secondary repair, nothing will have been lost and much may have been gained.
3. Ducts, be they urethra, ureter, salivary, biliary, or whatever, should, if possible, be primarily and formally repaired. The original procedure is an opportunity beyond recall for successful functional reapposition.
4. Tendons should be reapposed with nonabsorbable fine sutures, sustained by some method of proximal tendon traction more or less after the fashion of Bunnell. In the hand, deliberate sacrifice of superficial tendons will go far to insure function of deep ones after recovery from the repair period.
5. On the face, deliberate and careful, formal plastic procedures primarily will avoid many secondary plastic procedures. Every effort should be directed toward exact apposition in the eyelids, along the mandibular margins, the corners of the nose and mouth. Supporting subcutaneous sutures and fine early removable skin sutures should be used.

In general, the immediacy involved in trauma often tends to defer formality and planning, and this tendency is responsible for the bulk of technical error in the management of injury, even of the individual, peacetime non-disaster type. Procedures of a special nature, if they are certainly going to be ultimately indicated, should be undertaken, where possible, at the time of the original repair. This is particularly true of grafting of the face and hand, and in these areas careful primary consideration of the probable necessity of grafting is desirable.

The principles of the management of burns is a topic of its own. I need not dwell on the urgency of proper fluid, electrolyte, and blood balance attainable through the Evans or some similar formula—that is, approximately percentage x pounds equals the amount in cc.'s of intravenous fluids required within the first 24 hours, one-half of this amount being blood or plasma and the other half saline, with subsequent amounts to be determined by urinary output. I do not feel that the specific type of management chosen for treatment of the burn itself is crucial to the result. We favor the closed cradle, open air method with early debridement, as rapid grafting as possible, and the use of cultures and sensitivity tests and appropriate antibiotic therapy, with an eye ever watchful for the resistant staphylococcus.

A word about antibiotics in severe trauma: Some combination of penicillin and streptomycin is probably the most generally useful in the broader aspects of management. Aureomycin, terramycin, or chloromycetin should also be used in anaerobic infections. Sulfadiazine should be used where antibiotics are not practical.

A word about tetanus immunization: I am sure most of us feel that tetanus antitoxin, whatever its effect in reducing mortality because of the earlier treatment it makes possible, has little value as a prophylactic and is itself a sometimes dangerous drug. What a boon would be the possible universal immunization! My own personal experience over the past 15 years in reference to industrial persuasion and attempted editorialization concerning this matter convinces me that we will never make available to ourselves or to our public the ready prophylaxis against tetanus, and that we will continue to find it necessary to employ tetanus antitoxin.

### *Modifications Necessitated By Mass Disaster*

I have lingered overlong on what you already know. With your indulgence, and I am afraid at the risk of meeting with some degree of apathy since this attitude is characteristic of most of us in regard to preparations for disaster, I would deal for the remainder of my period with the alterations of management made necessary in time of war and disaster. I would be more concerned with the necessary adjustments of attitude than of techniques, though those must be changed for good results. I apologize for any overlapping this may represent in reference to other discussants because of the manifest importance of the topic at this time.

It is admitted that the desirable method of handling disaster victims would be the use of our normal professional structure

and methods. It is this very desirability that leads to our downfall when disaster occurs. In the face of injuries of all sizes and shapes, with disturbed communication and traffic control, in the face of disorder and confusion, the lack of sterile supplies, blood and plasma, the absence of authoritative triage and disposition, the futile efforts of hospitals and physicians to function under normal dicta add disaster to disaster. The principles of triage in the face of the above situation are contrary to our normal habit. Total disregard for caprice and individual tastes is an essential feature of disaster medicine. There must occur a basic modification of methods appropriate to the so-called tactical needs of the situation. As this principle affects soft tissue injury, it resolves itself, where the medical structure is so disabled that formal, sterile techniques and proper follow-up are not feasible, into the inescapable fact that wounds of any severity should be cleansed, debrided, supported, and left open for secondary closure. And, where formal management is necessary, those patients should be triaged toward an as nearly normally structured facility as is available.

In regard to these matters, I would like to offer two quotations: one from Col. Joseph Shaeffer that "As the casualties arrive at the hospital, the mad rush continues, and, as the volume increases, a bottleneck in the admitting office or emergency room develops. Efficiency rapidly diminishes in the area wherever the load is heavy, and effectiveness commonly grinds to a halt."

And to quote the Worcester, (Massachusetts General) survey: "A kind of probability thinking may occur: if we abandon part of the procedure we will save X amount of time per patient; we will thus be able to treat all casualties sooner and the net result will be better medical care for the total group of casualties: This thinking can well be utilized in terms of disaster and at the same time *corrected*, if we, in advance, have planned proper and authoritative triage and disposition of cases."

There is not enough time to clarify this matter adequately. Suffice it to say that in this nation's peacetime disaster experience, it has become evident that the medical profession and the civilian community have both been woefully apathetic in terms of preparation for disaster. The difficulty is readily understandable. All of us feel that we cannot know in advance the nature of the disaster; that we cannot know even if disaster will come at all; that the prior establishment of depots, mobile surgical units, and the like is not only impracticable but impossible. The resultant apathy blinds us to the fact that a great deal can be done about preparatory organization and regimentation of existing facilities.

Time is slipping by us, and the medical profession owes itself and its public some individual preoccupation with the problem of what we, right here in this room, would do if disaster should come to our town. It would be our professional responsibility to provide adequate medical care, and this we will not be able to do unless we assume ahead of time some of the directing responsibilities for immediate provision of the necessary hospital traffic control, emergency room facility, authoritative triage, the appropriate distribution and assignment of new patients, adequate sources of sterile supplies and blood, the organization of hospital personnel, and appropriate hospital evacuation of patients already in residence.

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# Initial Care And Disposition of Head Injuries

RICHARD H. AMES, M.D.

GREENSBORO

When an individual sustains a head injury, damage occurs to the brain and/or its covering structures. This damage occurs at the moment of impact and produces its ill effects immediately. As far as the brain is concerned the damage may take the form of concussion, contusion, or laceration. The effects depend on the nature of the damage and the areas of the brain involved. The important point to keep in mind is that the damage has already occurred and that nothing the surgeon does is going to undo it. Healing of the primary brain injury must be left to nature. It is the surgeon's function simply to assist nature by supportive treatment, plus prevention, recognition, and management of possible complications of the primary injury.

It follows, therefore, that when one sees a patient with a head injury which has occurred 30 minutes to an hour previously (and the majority of head injuries will be seen within these time limits), one may be reasonably certain that no dramatic surgical efforts are going to alter the situation. The immediate steps to be taken are only two in number and consist of (1) evaluation; (2) supportive treatment.

### *Evaluation*

In evaluating the injury, one is concerned with the various objective signs of brain damage. The most important single observation is that of the state of consciousness. Is the patient alert and aware of his surroundings? If not, will he respond to questioning or does it require shaking or some painful stimulus to evoke a response? Is the depth of stupor such that painful stimuli evoke only purposeless movements or no response at all? Does he move all extremities either spontaneously or in response to stimuli? Are the pupils equal and do they react to light?

Bear in mind that one is not attempting to make a detailed neurologic examination, but simply to estimate the situation and obtain a set of baseline data with which to compare subsequent observations. Only by comparing the results of repeated examinations over a period of time can one say whether the patient's condition is improving, stationary, or deteriorating. Except in extreme cases, one cannot reasonably predict either the outcome or future complications on the basis of the initial examination.

In addition to evaluating the brain injury one must look for injury elsewhere. It is easy for other injuries to be masked in an unconscious patient, since there may be no response to pain and the patient may be unable to cooperate during examination. External marks of violence or obvious deformity may provide a clue. Failure of extremities to move or breathing only with the diaphragm may indicate injury to the spine and spinal cord. Labored breathing, particularly in an individual who is not profoundly unconscious, should arouse suspicion of intrathoracic injury. A significant degree of shock is not a prominent feature of brain injury, and its presence usually must be explained by some associated injury.

### *Supportive Treatment*

Supportive treatment of a primary brain injury has as its basis one all important fact: *the brain must have an adequate supply of oxygen at all times.* In order to meet this requirement, there must be first of all a mechanically clear airway, unclogged by blood or secretions. In some instances the semi-prone position and suction may be all that is required. For the patient with an obviously severe brain injury who has difficulty in breathing, there need be no hesitation in doing a tracheotomy. Tracheotomy is preferable to intubation, since the tube cannot be left in place more than a few hours and does not materially reduce the volume of air which must be moved with each breath. Liberal use of oxygen is also advantageous. Prompt attention to any chest injury which may be reducing vital capacity is essential.

Transport of oxygen from the lungs to the brain requires adequate blood flow, plus an adequate hemoglobin level. Correction of shock and maintenance of a satis-

factory hemoglobin level by transfusion is essential.

Provided adequate oxygenation of the brain is maintained, one has considerable leeway in handling the patient with a brain injury. For example, sedatives such as sodium phenobarbital can be used in amounts necessary to control restlessness. If convulsions occur, they may be controlled by intravenous Sodium Amytal. Likewise, narcotics may be used to relieve the pain of associated injuries, assuming the patient is sufficiently conscious to require such relief. If an associated injury requires surgery, general anesthesia is permissible.

*Injuries to Overlying Structures*

At this point it might be appropriate to mention the treatment of injuries to the covering structures of the brain—that is, the scalp, skull and dura. Scalp lacerations may be cleansed and sutured in the emergency room after the area has been explored with the gloved finger for a possible underlying fracture. If a compound depressed skull fracture is present, the wound should be debrided and any underlying clot or macerated brain removed. The dura and scalp should then be closed without drainage. This procedure, of course, should be carried out in the operating room where adequate equipment is at hand. In deciding when to operate on such a fracture, it is helpful to bear in mind that the primary purpose of operation is to prevent infection, and that the patient's status relative to the primary brain injury will not be changed by the procedure. Simple depressed skull fractures should, as a rule, be elevated. Here the element of a contaminated wound is not present and the purpose of operation is to prevent, insofar as possible, the later development of focal atrophic changes in the underlying brain, thereby reducing the chances of post-traumatic epilepsy.

Skull fractures that are not depressed and basilar fractures do not require operation. In the case of basilar fractures into the mastoid, as evidenced by bleeding from the ear, or into the sinuses, as evidenced by escape of blood and cerebrospinal fluid from the nose, prophylactic treatment with a broad-spectrum antibiotic should be started and continued until several days after all drainage has ceased. An occasional patient will have a persistent cerebrospinal rhinorrhea requiring eventual operation for correction.

Routine skull films immediately on the patient's arrival at the hospital are of little value. The process of obtaining them is often an ordeal for patient and staff alike, and the resulting films are none too good. The only real indication for early skull roentgenograms is when the decision to operate has already been made on clinical grounds.

*Disposition and Subsequent Care*

For the general surgeon who elects to care for the patient with a head injury himself, disposition of the patient presents no problem. Likewise, there is no problem if he is in a community where there is a neurosurgeon. For surgeons in smaller towns who deal with head injuries through necessity rather than choice, the temptation is strong to place the patient in a waiting ambulance and rush him to the closest neurosurgeon. In general, this temptation should be resisted for a number of reasons. First, the patient stands to gain little, since only a small percentage of head injuries ever need surgical intervention, and an even smaller percentage need it during the first few hours after injury. Second, an ambulance trip may aggravate not only the brain injury but an associated injury—for example, a fractured femur. Third, during the trip there may well be inadequate supervision of the airway, not to mention such things as hemorrhage from a ruptured spleen, development of tension pneumothorax, and so forth.

If consultation is desired, it is preferable to discuss the case by telephone with a neurosurgeon. In this way it can be decided jointly whether to observe the patient further, to bring the neurosurgeon to the patient, or to transfer the patient to the neurosurgeon.

Continued observation of the patient with a head injury has only one purpose; to determine whether his condition is improving, remaining stationary, or deteriorating. Again I would emphasize that the findings of a single examination are meaningless. It is only by making repeated observations and comparing one examination with another that one obtains a true picture of what is happening.

The most important factor to be observed throughout is the state of con-

sciousness. Appearance of new signs such as changes in the pupils, weakness or paralysis of extremities, convulsions, and so forth are significant. Equally significant is the clearing of previously noted abnormalities. Significant changes in pulse, blood pressure, and respiration usually lag so far behind other signs as to be of little help in following the progress of the case.

Deterioration in the patient's condition as evidenced by deepening stupor or the appearance of new neurologic findings almost always demands intracranial exploration. Textbook descriptions of extradural hematoma to the contrary, it is most unusual for a patient's condition to deteriorate with dramatic suddenness. As a rule the process takes place over a period of several hours to several days, and permits an orderly approach to the problem. It is pointless, and more often than not impossible, to determine preoperatively whether one is dealing with an extradural, subdural, or intracerebral hematoma or pressure from pulped brain substance. It is sufficient to determine that the need for operation exists.

Nonsurgical care of the patient with a head injury follows established principles and needs little comment here. The unconscious patient should be turned frequently.

Sedatives are given as necessary to control undue restlessness. A retention catheter is useful. Fluid requirements and nutrition are conveniently handled by means of tube feedings. If hyperthermia is present, it should be controlled by external cooling.

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# Principles of Management of Chest Injuries in Mass Casualty Situations*

W. GLENN YOUNG, JR., M.D.
*and*
WILL C. SEALY, M.D.
DURHAM

The sudden influx of an overwhelming flood of casualties upon the medical facilities and personnel of the average American city or town presents a problem so great as to tax the physician's imagination. Civilian defense planning must face this situation and attempt to instill a semblance of order in a situation alive with the seeds of confusion and discouragement.

The weapons of modern warfare greatly increase the number of casualties in any given area but do not change significantly the types of injury that we would be called upon to treat. The only new factor, radiation injury, depends upon total dosage (related to distance, duration, and shielding) and aside from early decontamination has as yet no specific nor effective treatment[1].

What the individual physician and community must concentrate on are the principles of management of old fashioned burns, blunt and penetrating trauma, and their accompanying shock, in a setting of mass quantity. In a situation of this type, there would be a large number of immediate fatalities; however, the efficient application of emergency treatment would prevent an even greater number of deaths or prolonged morbidity in those less gravely injured.

The following discussion will be limited to the emergency care of injuries to the thoracic wall and its enclosed viscera. The diagnosis may be apparent but many times is overlooked in the presence of associated head, abdominal, or extremity injury. The signs of dyspnea, cyanosis, unexplained shock, hemoptysis, subcutaneous emphysema, flail chest, tracheal deviation, external bruises, and so forth, should attract the examiner's attention. On the other hand, obvious chest injury may overshadow even more serious associated injury elsewhere. Repeated portable roentgenograms are almost indispensable in the management of the injured chest.

### *Maintenance of Unobstructed Airway*

The majority of our present day principles in the management of chest injuries were derived from the experience of military surgeons during World War II[2]. It

*From the Division of Thoracic Surgery, Duke University Medical Center, Durham, North Carolina.

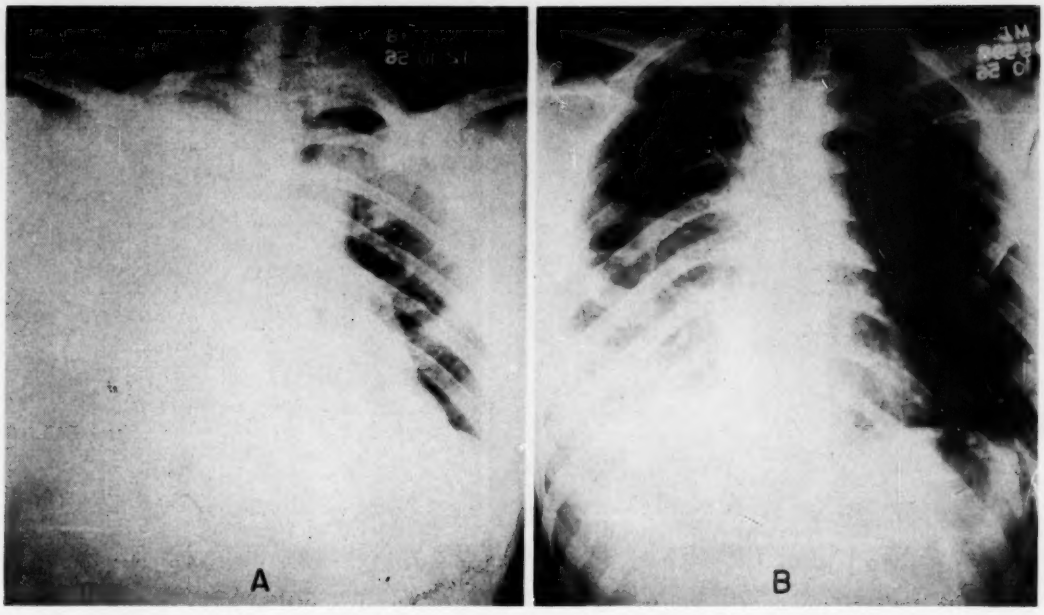


**Fig. 1. Hemothorax due to penetrating chest injury, before and after needle aspiration.**

has only been in the last six to eight years, however, that the importance of tracheotomy has become widely appreciated. Asphyxia from aspirated vomitus, retained secretions, and blood is responsible for more deaths in civilian injuries than the more feared and spectacular acute blood loss. The simple performance of a tracheotomy for endobronchial suction and oxygen administration, if necessary, will save lives immediately and also allow the physician to turn the task of maintaining the airway over to less experienced and skillful medical helpers. Tracheotomy greatly simplifies the task of transporting seriously injured patients.

### *Stability of the Chest Wall*

Ventilation of the lungs depends upon a systematic and repeated increase and decrease in intrathoracic volume and pressure. For example, during inspiration diaphragmatic descent and expansion of the chest wall increase the intrathoracic volume (with concomitant decrease in pressure) and air is drawn down the respiratory passages. This tidal volume is equal to the change in volume of the intrathoracic space. If a portion of the chest wall (for example, the sternum) loses its rigid attachment to the remainder of the chest wall, it will fail to expand and will actually move inward because of the change in pressure relationships. This paradoxical motion decreases to an extent the change in intrathoracic volume, and consequently decreases the tidal volume of air brought in by a given inspiratory effort. The opposite effect occurs, of course, during expiration.

The extent of ventilatory embarrassment brought on by loss of stability of the chest wall depends upon the size of the area involved. Fracture of one or two ribs is usually insignificant; however, multiple adjacent rib fractures or separation of the breast plate may rapidly be fatal.

Treatment is relatively simple, but should be initiated at once. Immobilization of the flail portion of the chest wall is obtained by the use of sandbags, adhesive strapping, or, if necessary, external traction applied through wires or towel clips under the ribs or costal cartilages.

### *Hemothorax*

Bleeding into the pleural cavity can occur from blunt or penetrating injury (figure 1). It may cause immediate difficulty either directly through loss of blood or by compressing the underlying lung tissue and reducing ventilation. Exsanguinating hemorrhage from the great ves-

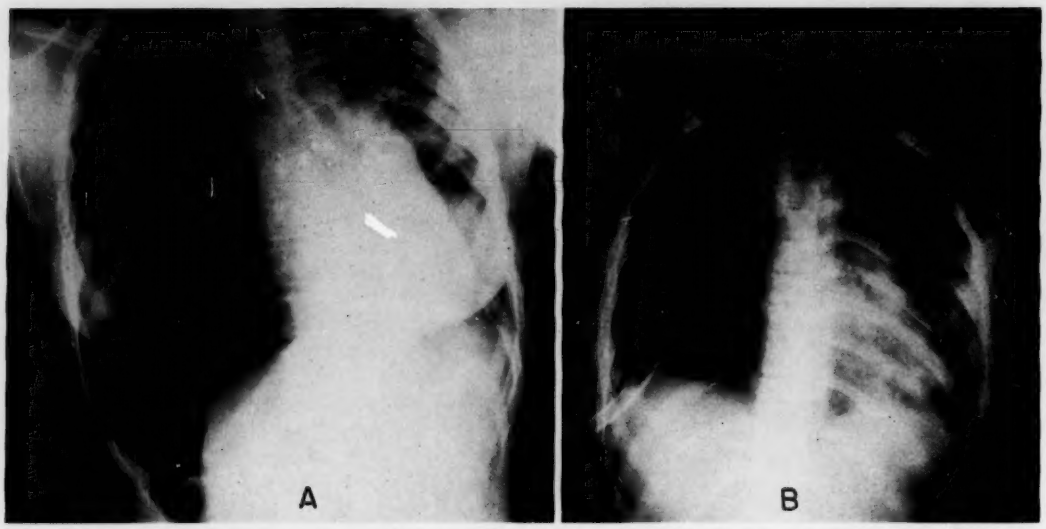


**Fig. 2. Severe tension pneumothorax following blunt trauma to right side of chest. Treatment by insertion of intercostal catheter.**

sels will probably not be preventable in the mass casualty situation. Bleeding from the lung, intercostal, internal mammary, or diaphragmatic vessels is the common situation, and should be managed by early and repeated aspirations by thoracentesis. This blood may be drawn into donor transfusion bottles and reinfused into the patient in situations where blood is scarce. In the occasional case where bleeding continues or recurs, open thoracotomy will be necessary.

*Injury to the Lung*

*Contusion:* Contusion of the lung is common following blunt trauma or blast injuries and is present to some degree in all penetrating lung injuries. Pathologically, it is simply a bruise, with edema fluid and extravasated blood filling the alveoli and interstitial tissues. The roentgenogram may show a mottled haziness or in more severe injury the ground glass density of the "drowned lung." Blood and excessive secretions in the tracheobronchial tree obstruct ventilation to the undamaged lung tissue, and therapy should be directed toward maintaining an airway and administering oxygen. Here again the use of tracheotomy should be emphasized.

*Pneumothorax and tension pneumothorax:* Escape of air into the pleural cavity may also occur with penetrating or blunt injury. The tear in the lung surface often acts in a valve-like fashion, allowing air to escape during inspiration but blocking its return during expiration. This situation, termed tension pneumothorax, leads to progressive collapse of the involved lung, mediastinal shift to the opposite side, and impairment of ventilation in the contralateral lung (fig. 2). Bilateral tension pneumothorax may occur. A seemingly trivial air leak immediately after injury often increases or develops tension several hours later, and may rapidly lead to respiratory embarrassment.

Tension pneumothorax is an extremely treacherous condition, and particularly in a situation where close observation will not be feasible the initial treatment of any degree of pneumothorax must be effective and afford protection during subsequent transportation. Needle aspirations or the insertion of small catheters which soon become clogged by fibrin are not satisfactory. Rapid and prolonged control can be accomplished by the insertion of a no. 28 or 30 French catheter through a small incision in an intercostal space (fig. 3). The catheter is then attached to underwater sealed drainage, which allows the air to escape and creates a slightly negative pressure during inspiration. Additional suction may be applied through this system if the air leak is unusually large.

*Subcutaneous emphysema:* Occasionally

following pulmonary injury, either with or without pneumothorax, air may dissect along the pulmonary vessels and bronchi into the mediastinum and thence along the fascial planes into the tissues of the neck, face, and trunk. Crepitation is felt beneath the skin, and the patient may look like a puffed-up toad or balloon. Although the condition is frightening to the patient and relatives and disconcerting to the physician, it in itself is usually of no consequence. The presence of subcutaneous air, however, should alert the physician to the possibility of a tension pneumothorax or other intrathoracic injury.

*Injury to Other Intrathoracic Viscera*

Any of the mediastinal structures, including the heart, esophagus, thoracic duct, and great vessels, may be damaged by blunt or penetrating trauma. Arrhythmias or electrocardiographic evidence of pericarditis or myocardial infarction may be the result of contusion of the heart. The physician should be alert to the possibility of cardiac tamponade as a cause of unexplained hypotension. The clinical signs include marked peripheral vasoconstriction, hypotension with low pulse pressure, paradoxical pulse, distended neck veins, and distant heart sounds; however, more important in its recognition is a high index of suspicion in the examiner's mind. The chest roentgenogram will usually not show enlargement of the cardiac silhouette in this acute condition. Needle aspiration of the pericardial blood will bring about dramatic improvement.

Rupture of the diaphragm is not uncommon following trauma to the upper abdomen and lower chest wall. Herniation of the stomach and intestines into the thorax may cause marked respiratory difficulty.

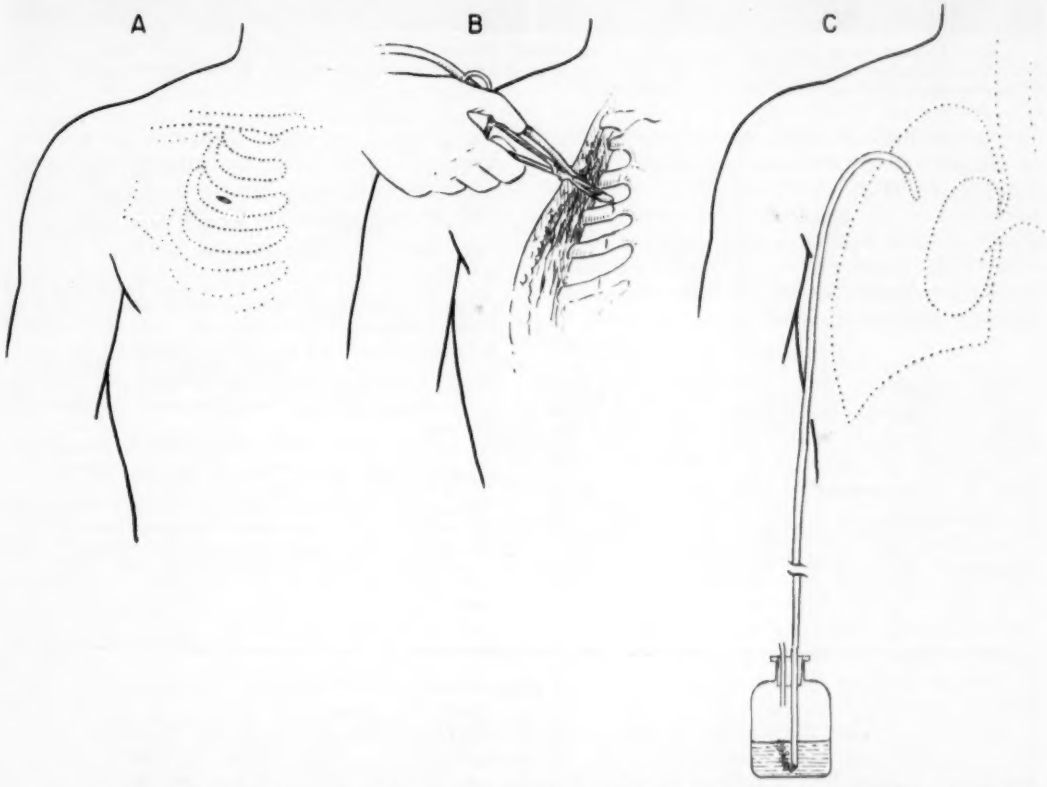


**Fig. 3. Technique for insertion of intercostal catheter. (A) Small skin incision under local anesthesia in second anterior interspace. Incision deepened through intercostal muscle and pleura using blunt tipped clamp. (B) No. 28 or 30 French catheter inserted through incision into pleural cavity with aid of Kelly clamp. (C) Catheter subsequently attached to underwater sealed drainage.**

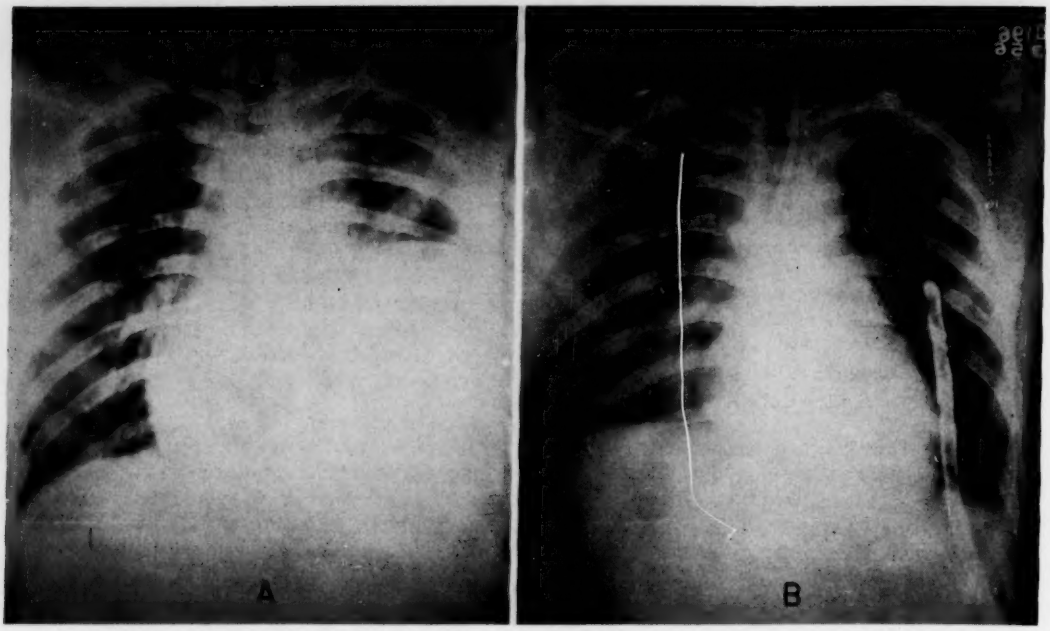


**Fig. 4. Traumatic rupture of left diaphragm with herniation of stomach and intestines into hemithorax. X-ray shadow which resembles elevated left side of diaphragm is the fundus of the stomach. (B) After thoracotomy with repair of rent in diaphragm.**

The x-ray picture might be misinterpreted as simply a markedly elevated or paralyzed diaphragm (fig. 4). Because of the embarrassment to respiration, danger of ischemia to the herniated viscera, and possibility of other intra-abdominal injury, operative repair should be carried out as soon as possible.

*Summary*

The diagnosis and emergency management of common injuries to the chest have been reviewed. It is felt that the major deterrent to confusion and inefficient handling of mass casualties will be an adequate understanding by every physician of the basic physiologic changes brought about by trauma to the various regions of the body. Particularly in chest injuries, the application of a few relatively simple emergency measures will save lives and ease the problem of subsequent treatment.

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*Note*

The editors regret that through an error the galley proofs of the article "Life Situation and Venous Pressure in Congestive Heart Failure" by Doctors Martin, Vernon, and White (North Carolina M.J. 19:513-523, December, 1959) were not received before the JOURNAL was printed. Corrections appear in the reprints, obtainable from the authors.

# Diagnosis and Management of Abdominal Injuries

I. WOODALL ROSE, JR., M.D.

ROCKY MOUNT

Unless stated otherwise, this presentation will deal with the general principles of diagnosis and management, under ideal conditions, of abdominal injuries exclusive of the genitourinary tract.

Abdominal injuries may generally be classified as penetrating and nonpenetrating, the latter often referred to as blunt trauma. Either type of injury may result in laceration of a solid organ or perforation of a hollow viscus, the results respectively being hemorrhage and peritoneal soiling.

Penetrating wounds anywhere between the knees and the shoulders should arouse suspicion of associated intra-abdominal injury, depending to some degree on the injuring agent.

Nonpenetrating injuries, in which solid organs are more likely to be fractured, may result from localized blows or trauma against the lower part of the chest, back, or loin, as well as the abdomen itself. Crushing injuries, tears or lacerations by bone fragments, falls, blasts and explosions may also be causative factors.

The majority of fatalities in these patients are due to shock, both the severity and duration of which are of prime concern. Infection, also an influence on mortality along with shock, dictates the necessity for keeping at an absolute minimum the lapse of time between injury and operation.

### *Emergency Measures*

The immediate handling of the patients is of extreme importance and in many instances will decide the final outcome. Those patients with penetrating injuries should be prepared for operation at the earliest moment, as the optimum time for repair is before signs and symptoms become apparent.

In those who are obviously shocked, or even those in whom the onset of shock seems imminent or rather possible, the first line of attack is to combat this process by methods and procedures with which you are all familiar. When all available measures fail to counteract shock, operation may have to be done early as a life-saving device, in which case it actually becomes a resuscitative procedure.

After the more important measures to combat shock are under way, the insertion of a gastric tube, preferably larger than the usual Levin tube, will succeed in at least partially emptying the stomach and at times give evidence of gastric bleeding, helpful from a diagnostic point of view. It will serve also to reduce distention as well as the anesthetic hazard of vomiting and aspiration.

The institution of antibiotic therapy and prophylaxis against gas gangrene and tetanus is wisely carried out during this acute phase.

### *Diagnosis*

After the necessary resuscitative and life-saving measures are begun, every method of diagnosis necessary must be used so long as it will not harm the patient. If at all possible, a detailed history should be obtained. Information as to the source of injury, localized or widespread, the nature of the accident, and the location of points of subjective pain will help determine which structures are involved. Information as to the presence of blood in vomitus or the passage of blood by rectum may be revealing.

We find our greatest help with diagnosis in the physical examination, which should be complete, gentle, without undue exposure, and performed on the disrobed patient so that no injuries will be overlooked. A systematic examination should be done and care taken that obvious injuries do not divert the examiner from the less obvious but more serious abdominal injuries. Any evidences of chest or pelvic injury that may affect the abdomen are noted. Points of entrance or exit of penetrating wounds should be ascertained, as well as bruises, abrasions, hematomas, and areas of erythema. Splinting of the abdomen, movement with respiration, and the evaluation of tenderness are determined. Percussion will give indication of distention, flank and shifting dullness, and the outline of certain organs or masses. The use of the stethoscope, on the abdomen

will disclose the presence or absence of peristaltic sounds which are important indications of peritonitis. Normal sounds usually speak against peritonitis, but this is far from infallible. The absence of sounds likewise is not an absolute indication of visceral injury, as ileus may be produced from injuries outside the abdominal cavity. A digital examination of the rectum should not be omitted. It is easy to do, and may give evidence of bleeding in the area of the gastrointestinal tract.

Following the foregoing procedures there will be times and situations wherein proctoscopy may be of value. Likewise needle aspiration of the abdomen may be helpful, if positive, but is completely without value when negative.

In eliciting physical findings, it is well to recall that very often visceral injuries will not manifest themselves until some hours, or even days, after the initial trauma, and such absence of signs is a disarming feature. Hemorrhage into the abdominal wall may be confusing, with its signs of tenderness and rigidity; and fractures of the lower ribs will often give upper abdominal signs when there is actually no intra-abdominal injury.

In the diagnosis of abdominal injury, no laboratory test ever devised can compare with the full utilization of the examiner's powers of sight, touch, and hearing. Nevertheless, the laboratory, under which heading we include roentgenography, may offer some earnestly sought-for help. Determinations of hemoglobin, cell counts, hematocrits, and blood volume are among the most common aids. Early hematocrit determinations, however, before hemodilution occurs are of little value, whereas blood volume determinations will demonstrate blood loss at an early stage.

Roentgen examination may reveal retained foreign bodies, soft tissue shadows of stomach, spleen and liver, and their possible displacement by hematoma. A clear outline of the right psoas shadow, with areas of lesser density which could be air bubbles, may indicate a retroperitoneal rupture of the duodenum. Free fluid, especially blood, may be detected, and the presence of free gas is of utmost help. Absence of air or gas does not rule out perforation of a hollow viscus.

In the patient with blunt trauma who is suspected of having intraabdominal injury, but without sufficient evidence to support the diagnosis, watchful waiting requires close observation and careful noting of both positive and negative findings. It is well to recall that one or two sphygmomanometer readings may not give the true story. Repeated readings and pulse determinations, the patient's general appearance, reexamination of the abdomen, the following of hematocrits, and better yet blood volume, may well indicate a trend in the patient's course. Re-examinations at short intervals by the same surgeon is clearly indicated for proper evaluation of changes in signs and symptoms.

*Operative Measures*

On the other hand, if operation is indicated, delay invites disaster. While treatment of wounds necessarily takes precedence, it should not be allowed to delay definitive treatment of the abdominal condition unduly. Preoperative medication is administered, the agents and quantities being determined individually. Since shock may ensue during operation, adequate amounts of whole blood should be available and large bore needles fixed in one or more veins to assure administration when and as needed.

Endotracheal ether-oxygen anesthesia with the concomitant use of muscle relaxants favors the surgeon and entails the least risk to the patient. Subarachnoid anesthesia is usually contraindicated. Patients without acute or chronic shock may do well, but those with low blood volume and shock tolerate spinal anesthesia poorly, and are still subject to aspiration of vomitus. It might be remembered, however, that the anesthetic agent is not as important as the man giving it.

In the operative approach, wounds of entrance and exit should serve as guides for placing the incision and not as starting points. The incision should be determined in view of the most likely site of injury, with accommodation for extension. It should be liberal, giving wide exposure, which means less retraction as well as greater ease and completeness of exploration.

As the surgeon enters the abdomen of such a patient, several important considerations should be indelibly stamped on the surgeon's mind, namely:

1. Control of bleeding.

2. Thorough and systematic examination of all viscera.

3. Thorough care of all wounds found.

4. Debridment of nonviable tissue and removal of foreign bodies.

5. Adequate drainage, properly applied, when and where required.

More specific, but still quite general and condensed rules of thumb may be mentioned:

1. Wounds of the stomach can usually be closed, making resection rarely necessary.

2. Duodenal wounds are extremely easy to overlook, and doing so leads to disastrous results. Adequate examination requires extensive mobilization in some instances. The anterior wall may be opened for inspection and repair of posterior wall injuries. Repair should be meticulous and without undue tension, and the insertion of drains to the retroperitoneal space is frequently advisable.

3. Small intestinal injuries, which are frequently multiple, most often are repaired by simple closure. In more extensive damage to the small bowel or its mesentery, resection with end-to-end anastamosis is desirable. Exteriorization is most undesirable, and should not be done unless absolutely necessary. To miss or to close inadequately one perforation may make the most formidable and extensive operation a failure.

4. Injuries to certain portions of the colon may also be easily overlooked, especially fixed portions. There should be no hesitancy in mobilizing these fixed areas when necessary for adequate inspection. Perforation or tears of the colon bring up the question of exteriorization versus closure and the advisability of diverting colostomy. In selected cases primary closure seems indicated. Drains may or may not be used. If there is tension on suture lines, if there is a question of having used ischemic or nonviable bowel for closure, or if there are extensive injuries of the large bowel or its mesentery, then exteriorization seems indicated. Cecum and ascending colon are sutured if at all possible, and at times a proximal tube cecostomy done. If one is unable to close an area of cecum and ascending colon, resection with an ileotransverse colostomy is far better than exteriorization. Ileostomy should be used only as a last resort.

5. In wounds of the extraperitoneal rectum, one should carry out proximal colostomy, repair the wound when possible, and establish retrorectal or presacral drainage through a postanal incision. A large tube passed in through the anus and left in place to permit exit of discharge is helpful.

6. Liver damage results in hemorrhage and spillage of bile. One frequently reads glib comments on repair of liver wounds with suture. This is a desirable method of treatment but not always easy or effective. Isolated vessels or ducts may at times be seen, clamped, and ligated. There is some controversy over the advisability of using absorbable hemostatic packs. Suffice it to say that on occasion it definitely becomes necessary. Nonabsorbable packs should be used only as a last resort. Drainage through a separate wound is necessary for a contaminated retroperitoneal or subphrenic space, and the lesser peritoneal cavity.

7. Pancreatic wounds are sutured when possible, main ducts are repaired and drainage is established for both the greater and lesser peritoneal cavities, and possibly the retroperitoneal space. On occasión, when necessary, the main duct may be ligated and the distal pancreas resected.

8. Injury of the spleen is treated by splenectomy, even if the hemorrhage has ceased or is subcapsular at the time of laparatomy.

9. With respect to the biliary system, a perforated gallbladder may be handled by cholecystostomy, but cholecystectomy is preferable if one is certain that injuries to the common duct do not call for utilization of the gallbladder in a shunting procedure. Wounds of bile ducts should always be repaired whenever possible, and proper drainage established.

10. Injuries to large vessels such as the aorta, vena cava, and iliac arteries usually cause death before medical attention is possible. When small wounds of these vessels are present, they should be repaired with vessel sutures. The hepatic artery, portal vein, and superior mesenteric vessel should be repaired whenever possible, and not ligated. Mesenteric hemorrhage, hematoma, and tears should be approached with caution. The mesentery is inspected for pulsations and extension of hematoma, and

the area of bowel supplied watched for viability. If in doubt, resection is best. Retroperitoneal hematomas which conceal the posterior wall of a hollow viscus should be removed and explored.

*Mass Casualties*

In mass casualties with multiple injuries, compromises with ideal management will have to be made. Surgical judgment and timing of procedures are of paramount importance, and each case must be judged individually. Naturally, life-saving procedures such as arrest of severe potentially exsanguinating hemorrhage and establishment of cardiac-respiratory equilibrium, should come first.

After attention has been paid to these immediate life-endangering situations, individual cases may occasion an alteration in priority, but in general it seems that intraabdominal injuries would follow in close succession.

Among the abdominal cases themselves, surgery should be done as soon as possible on all requiring it. When some patients must wait, however, it would seem that the one with hemorrhage should precede the hollow viscus injury, taking into account however the degree and duration of shock and the response to anti-shock measures. For those who must wait, supportive therapy should be intense and observation meticulous.

* * *

# Diagnosis and Management of Genitourinary Injuries

HOMER R. JUSTIS, M.D.

*and*

H. HAYNES BAIRD, M.D.

CHARLOTTE

Severe trauma of the urinary tract is rarely an isolated entity. It is usually associated with concomitant injury or injuries to adjacent structures in the inferior thorax, abdomen, and pelvis; and as such, deserves attention in proportion to its severity[1]. Our remarks are directed to the physician rather than to the urologic surgeon, to assist or aid him in the management of the severly injured patient—especially to emphasize the indication for immediate surgical or conservative treatment. The various structures of the urinary tract will be considered separately.

*Injuries to the Kidneys*

Injuries to the kidneys have increased during recent years, mainly as a result of the increased number of automobile and industrial accidents. We have separated all traumatic injuries of the kidney into three groups[2], the classifications being governed not so much by the anatomic and pathologic nature of the injury as by the method of diagnosis and management. It should be stated at the beginning that intravenous pyelograms can be obtained in patients with surprisingly low blood pressures and have been obtained with those in shock.

In group 1 the patient gives a history of trauma followed by mild to severe pain in the loin and microscopic to macroscopic hematuria. Flank tenderness and muscle rigidity may or may not be present. An excretory urogram may show diminished or absent function, with a clear psoas shadow and renal outline. On retrograde pyelogram there is no evidence of extravasation. Thus, anatomically the kidney is normal and is classed as contused.

In group 2 the foregoing signs and symptoms are usually more pronounced and may or may not be associated with a mass in the loin. If a urogram shows evidence of perirenal hemorrhage or extravasation of dye, the case belongs in group 2. Subcapsular hematoma is included in this group.

In group 3 the presenting feature is shock, which is progressive despite transfusion. The urinary hemorrhage is profuse and commonly results from rupture of the vascular pedicle. A mass is generally palpable; pain, tenderness, and rigidity are accentuated. In this category belong the shattered kidney and lacerated renal pedicle.

*Report of Cases*

*Group 2*

The tendency is to operate immediately on patients in this group. It is our opinion that many patients in category 2 can be salvaged if operation is delayed 72 hours, at which time the line of infarction is visible and active hemorrhage is not a real problem.

**Case 1**

A Negro, aged 42, was admitted to the hospital approximately 24 hours after having been struck over his back by a chair while fighting. He experienced right flank pain followed by grossly bloody urine. On physical examination the right flank was rigid and exquisitely tender, and there was a suggestion of an underlying mass. On x-ray the psoas and lower half of the right renal shadow was completely obliterated. An excretory urogram indicated no function of the right kidney. Retrograde pyelography 72 hours following injury showed extravasation of dye from the middle and inferior calices. Exploratory operation disclosed a ragged deep laceration on the anterior and posterior surfaces of the middle third of the kidney, extending deep down to the hilus anteriorly. Numerous areas of ischemic infarction were seen on the surface of the kidney. A nephrectomy was performed, from which the patient made an uneventful recovery.

*Comment:* This patient, despite the fact that the kidney was severely fractured, went 72 hours without any evidence of shock. Earlier operation would have been technically more difficult and dangerous because of active hemorrhage.

**Case 2**

A deaf mute student, aged 18, was admitted to the hospital three days after a football injury. A dull aching flank pain had developed and his urine had become bloody. Examination revealed slight flank tenderness. A scout film of the abdomen disclosed poorly defined right renal and psoas shadows. An excretory urogram revealed diminished right renal function. Retrograde pyelograms showed extravasation of the dye from the inferior minor calyx. Because the flank tenderness was minimal and the urine had become clear, we did not operate but discharged the patient on the sixth hospital day. He was readmitted on two occasions because of gross hematuria and colicky pain, and finally an exploratory operation was performed one month after the injury. The kidney was densely adherent over the lower pole, and was only partially mobilized with the greatest difficulty. Rather than leave the kidney and subject the patient to further bleeding, a nephrectomy was performed.

*Comment:* In this case, if we had followed our postulates, an exploratory operation would have been performed and the kidney would have been salvaged by nephrostomy drainage at the 72 hour period. However, by wishfully thinking that we could treat it as a nonoperative, group 1 case, we were forced to perform a nephrectomy at a later date. In reply to those who would say that the recurrent hemorrhages were due to infection carried to the ruptured area by retrograde pyelography, we would like to add that urine cultures were sterile on all admissions. It has been shown that some kidneys in group 2 will completely atrophy if treated conservatively.

*Group 3*

Patients in this group require immediate operative intervention as a life-saving measure as soon as shock treatment has been instituted. An excretory urogram may be obtained during the interval as supportive evidence and to evaluate the opposite kidney.

**Case 3**

The patient, a log turner, aged 39 years, was admitted to the hospital two hours after a crushing blow to his right flank by a sawmill log carriage. He was in moderate shock, his bladder was distended, and he was able to pass only a few blood clots via the urethra. X-ray studies showed partial obliteration of the right psoas and renal outline, with absence of right renal function on urogram. The patient progressed into deeper shock despite transfusions of plasma and whole blood. Emergency operation revealed a shattered right kidney, with rupture of the renal vein which apparently communicated with the pelvis. After removal of the kidney, the patient responded to transfusions of whole blood and quickly recovered from the shock.

*Comment:* We believe that this patient would have bled to death if he had not been brought immediately to the hospital. Nephrectomy was a life-saving measure, as he was bleeding profusely from a tear in one of the major pedicle vessels. In all cases in category 3 the peritoneum should be opened and inspected for possible associated injuries.

Days after a severe injury, the surgeon is often confronted with lower nephron nephrosis, and there seems to be a general idea that such cases should be treated with the artificial kidney. Sixty to 80 per cent of these cases will respond to conservative treatment. The artificial kidney should be used under the following conditions: (1) reversible conditions; (2) potassium intoxication and rapid deterioration of the

patient with increasing azotemia such as in infection. There are many disadvantages to the use of an artificial kidney. Heparinization is required, thus increasing the risk of hemorrhage.

### *Injuries to the Ureters*

The ureters are seldom subject to traumatic injury. Injury is, however, infrequently seen as the result of external stab and gunshot wounds. The diagnosis is usually not difficult once the possibility is considered. An intravenous urogram followed by cystoscopic examination will make or exclude the diagnosis. Treatment[3] consists of establishing the continuity of the ureter with adequate drainage — in general not an urgent procedure unless there is evidence of contralateral renal damage.

**Case 4**

A 26 year old white married man was admitted through the emergency room following a gunshot wound of the abdomen. An abdominal laparotomy was performed, with closure of perforations of the gallbladder and transverse colon. A flat plate of the abdomen prior to operation showed a metallic foreign body (bullet) in the right lower quadrant, but no attempt was made to remove it at operation. On the fourth postoperative day, the patient passed grossly bloody urine. An intravenous pyelogram showed moderate dilatation of the collecting system down to the vicinity of the bullet, seen on the flat plate at the time of admission. Cystoscopic examination with right ureteral catheterization and oblique roentgenogram showed the metallic foreign body to lie outside the course of the right ureter. Extravasation of the dye was also seen in the right midureter. Exploration of the right ureter revealed a periureteral abscess with a defect in the wall of the ureter. While an assistant used a cystoscope to pass a catheter up the ureter to the region of the abscess, the operator directed the catheter to the renal pelvis. Postoperatively the catheter was left in place for 10 days. An intravenous pyelogram made two weeks following removal of the catheter showed a normal collecting system and ureter on the right side. This case illustrates repair by the simple method of intubated ureterotomy.

### *Injuries to the Bladder and Posterior Urethra*

Injury to the empty bladder is relatively infrequent, whereas the distended bladder is commonly subjected to trauma. Pathologically the injury may vary from mild contusion to rupture with urinary extravasation. In general intraperitoneal rupture is associated with severe trauma to the anterior abdominal wall, and extraperitoneal rupture is most likely to be associated with fractures of the bony pelvis[4].

**Fig. 1. (Case 5)**

Severe injury to the posterior urethra usually follows trauma so violent as to disrupt the pelvic architecture. Since the membraneous urethra is firmly fixed as it transverses the urogenital diaphragm, and the posterior urethra is relatively mobile, in any injury to the bony pelvis one should consider an injury to the urethra as it enters the urogenital diaphragm.

*Diagnosis*

Every patient with an injury to the bony pelvis should be studied for possible vesical injury. Rectal examination will aid in making the diagnosis of injury to the posterior urethra. In suspected injury, one can usually make a definitive diagnosis with the cystogram, using an opaque media which would not be injurious if it entered the vascular system. Sodium iodide should not be used, since it is irritating to injured tissue. Where urethral catheterization is impossible because of damage to the urethra, the urethrogram will usually confirm the diagnosis and site of urethral injury. Cystoscopy is mentioned only to condemn its use.

Management of injuries to the bladder and posterior urethra can best be presented with illustrative cases.

**Case 5**

A 25 year old white man was admitted in a state of shock following an automobile accident. There was marked abdominal rigidity associated with the passage of a small amount of bloody urine. An intravenous pyelogram showed good renal function. Opaque cystogram revealed extravasation of dye.

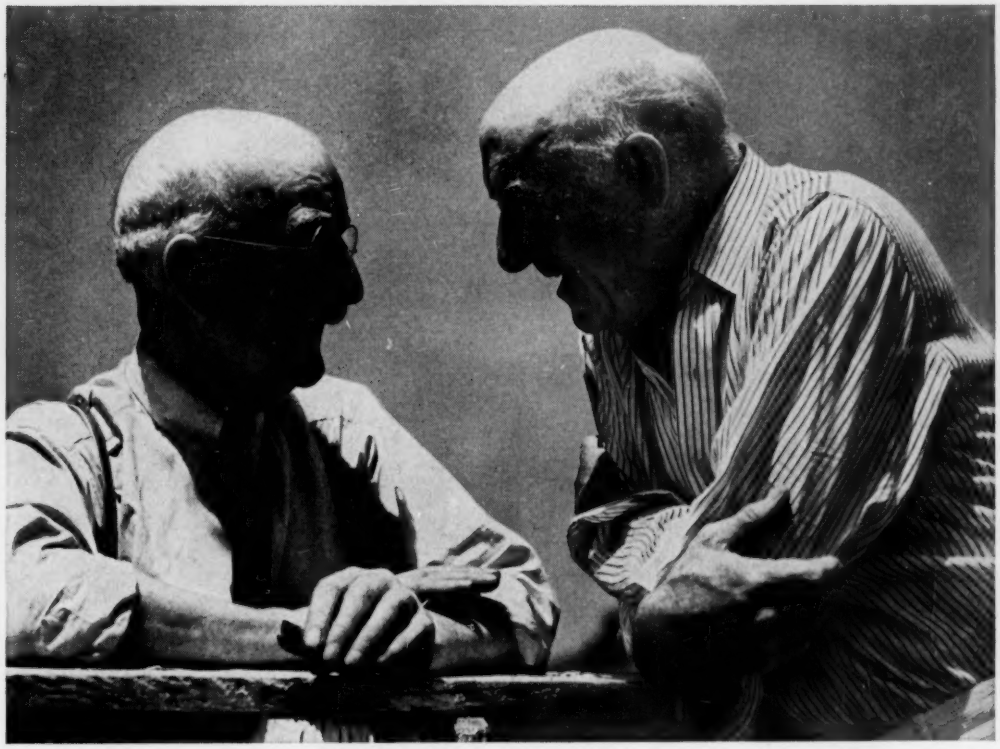

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Fig. 2 (Case 6)

There was in addition a fracture of the shaft of the left femur. When his general condition permitted, an exploratory laparotomy was performed, and an intra- and extra-peritoneal rupture of the bladder was repaired, with drainage of the bladder and perivesical region. Muliple pulmonary fat emboli developed in the patient, who expired on the eighth hospital day.

*Comment:* In all cases of rupture of bladder, even if extraperitoneally, the peritoneum should be opened and examined for possible ruptured viscus.

**Case 6**

A 16 year old youth was admitted to the hospital one week following an automobile accident because of difficulty in voiding, abdominal pain, and a temperature of 101 F.

On physical examination there was marked muscle spasm in the lower part of the abdomen. An opaque cystogram revealed the bladder to be elevated, narrowed, and compressed from a soft tissue mass in the perivesical region.

A suprapubic exploration was performed with evacuation of a large hematoma from the perivesical region. Penrose drains were used and the postoperative course was uneventful.

*Comment:* In this case, the cystogram is that of a typical "tear drop" bladder from perivesical hemorrhage. Because of the possibility of infection, we advised adequate drainage after the patient's general condition permits.

Fig. 3 (Case 7)

**Case 7**

A 27 year old sailor was admitted through the emergency room in an unconscious state following an automobile accident. Physical examination including roentgenograms revealed a flaccid paralysis of the extremities, fracture of the right pubic bone, and cystographic evidence of a ruptured bladder.

An exploratory laparotomy was performed, and an intraperitoneal rupture of the bladder repaired with drainage of the bladder and perivesical space. Postoperatively the cystotomy tube was left in place for two weeks. During hospitalization the patient was placed on a low calcium diet, mandelamine to acidify the urine, and a high fluid intake to prevent urinary lithiasis. The postoperative course was uneventful.

*Comment:* This case represents an intraperitoneal rupture of a distended bladder. Suprapubic drainage was mandatory to prevent a chemical peritonitis.

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## Discussion

**Dr. Fred Taylor** (Charlotte): I want to discuss Dr. Young's paper, which I enjoyed very much and certainly agree with. I would like to comment on one thing that is seen all too often: the stampede to the x-ray room in the face of a chest injury. Certainly initial resuscitation should not require an x-ray of any kind. X-ray is not needed to detect the indications for tracheotomy, intercostal tube, or intercostal nerve block. It is not uncommon to see a cyanotic patient who has received a chest injury lying on a hard x-ray table an hour or two after entering the emergency room, before any resuscitative measures have been applied.

I would also like to stress the importance of intercostal nerve block, since I think a number of patients, especially those with fractures of the ribs, will respond to this one measure alone.

**Dr. Hubert Patterson** (Chapel Hill): I would like to ask Dr. Baird about the dependability of a urinalysis for red blood cells in ruling out renal injury. If numerous examinations fail to disclose red blood cells in a patient having persistent pain in the flank, can we rule out the possibility of renal injury?

**Dr. Baird:** In general I would say that the urine should contain some red cells in the presence of a kidney injury. It is possible, however, for the patient to have a large perirenal hematoma, let us say, with compression of the ureter, so that only a few cells can get down. The question also depends on who examines the urine. I have received a report of an occasional red cell when I knew the specimen was grossly bloody when I sent it to the laboratory.

**Dr. John Hamrick** (Shelby): I would like to mention a recent case which was new to me, and ask if anybody else has encountered one like it. I was called to the recovery room to see a patient who had been operated on by a gynecologist. The patient's neck was distended almost even with her chest and chin with subcutaneous emphysema; she was extremely cyanotic, and showed marked respiratory embarrassment. We were told that she had had a laryngeal spasm, and that the anesthetist had resorted to some rather forceful pumping. I don't know whether the trachea or just what had ruptured, but something had. We performed a tracheotomy, and she made a satisfactory recovery.

**Dr. Young:** We have seen subcutaneous emphysema severe enough to cause respiratory distress just from pressure in the neck. In such cases, we perform a tracheotomy and also allow the air to come up through the tissues.

Another possibility is what we call traumatic asphyxia, in which there is compression of the chest, hemoglobinemia, and subconjunctival hemorrhage. Tracheotomy is also necessary in this situation.

**Dr. McCord Williams** (Charlotte): I'd like to mention the problem presented by the severely traumatized patient, such as the one I once had who was injured when a tractor turned over on him, causing fractures of the pelvis and multiple injuries of the abdominal wall. I mistakenly postponed operative treatment, believing that the other injuries would explain the abdominal findings. This patient was found to have a ruptured colon and died of peritonitis, apparently because of my neglect. I believe that the contribution of Dr. Morax in using a needle to aspirate the abdominal cavity would be extremely useful in such situations.

Stress has become a necessity in all of our modern life. We set out whole patterns of life by our stress end-point. If we hit it exactly, we live exactly, we live dynamic, purposeful, useful, happy lives. If we go over, we break. If we stay too far under, we vegetate. It is the keystone in our whole personality and physiologic development in this competitive society that we live in. Many feel, and I am one, that stress is a real factor and one that is very difficult to evaluate, in the increasing incidence of hypertensive and coronary disease.—Rusk, H. W.: Stress in the World: The Individual and the Doctor, Med. Ann. District of Columbia, 27:259 (May) 1958.

# Hospital Disaster Planning and the Flat Rock School Fire

E. L. MARSTON, M.D.
*and*
LOUIS SHAFFNER, M.D.
WINSTON-SALEM

It will take only one small group of catastrophe patients to convince any hospital staff of the importance of disaster planning and organization. Much attention has been given recent catastrophes in lay and medical literature. The explosion in Texas City, the tornado in Worcester, Massachusetts, the hurricane along the Gulf coast, and even the recent food poisoning episode in Marion, North Carolina, are apt illustrations.

Colonel Joseph R. Shaeffer, M.C., consultant on Medical Care in Disaster at the Walter Reed Army Medical Center, in repeatedly emphasizing the need for civilian disaster planning, has said: "Let me give you ten severe burns, and I will disrupt your hospital." We thoroughly agree.

On February 22, 1957, at approximately 2:30 P.M., the Flat Rock Elementary School in Surry County near Mount Airy, North Carolina, burned to the ground. One child was burned to death in the building, and numerous others received burns of various extents.

The North Carolina Baptist Hospital in Winston-Salem, 40 miles away, received a telephone call that the fire had occurred and that as many as 150 severely burned children might be sent to us. Fortunately for us, a disaster planning committee had developed and submitted a first draft of a disaster plan for this hospital. This included provision for notification of personnel and staff, designation of various treatment centers, and appointment of a triage officer and surgical teams. Also included were plans for identification of victims, dealing with relatives and the press through an information center, handling of blood donors, assignment of nurses and non-professional personnel, procurement of supplies that would be needed, and discharge of in-patients to make room for victims.

Instead of the anticipated maximum of 150 children, only 12 casualties were seen. Eight children and one teacher were admitted to this hospital for treatment, 3 other children receiving out-patient care.

Even with such a small number of casualties and a tentative disaster plan, there was still a great deal of confusion and numerous deficiencies were noted.

Our experiences and observations during this time may be discussed under three headings: triage or sorting, treatment of burns, and the cost of medical care.

## *Triage*

Sorting is certainly the key to efficient management of more than a few patients, so that the greatest good can be given to the greatest number.

This process should begin at the scene of the disaster. The physician first on the scene must not become involved in rescue operations or immediate treatment of victims. His duties are those of a triage officer —namely, evaluation of (1) what has happened, (2) how many people are involved, and (3) the probable extent and types of injuries. He should select patients for disposition according to the extent of their injuries and dispatch them to the available treatment centers, using lay volunteers as aides for emergency work and evacuation. He should notify the receiving hospital, giving the above information and also the estimated time of arrival of patients.

One of the Mount Airy physicians, Dr. T. C. Britt, on finding his office suddenly jammed with victims and their relatives, alerted this hospital, prepared his station wagon as a mass ambulance, ordered his nurse to give morphine, and advised others to bring the seriously burned here. His call, and another from the State Highway Patrol, gave us about 45 minutes to prepare to receive the victims.

The Disaster Committee, upon receiving the alert, attempted to put the plan into action, realizing that all personnel had not been indoctrinated in their duties.

By 3:30 P.M., when burned patients be-

From the Department of Surgery, Bowman Gray School of Medicine of Wake Forest College and the North Carolina Baptist Hospital, Winston-Salem.

gan to arrive in automobiles and ambulances, the personnel of the hospital had been alerted and were in the emergency area. In the meantime the operating room had been cleared, the housekeeping department notified, and extra linens prepared. The engineering and housekeeping departments together were setting up beds in a ward which had been temporarily closed, and the out-patient department had been alerted to receive critical patients along with the emergency room.

For an hour or so there was much confusion. Many doctors, nurses, aides, orderlies, housekeepers, engineers, medical students, chaplains, and dietitians were milling around, wanting to help but not knowing how. The assigned triage officer was not present, and no one knew who was taking his place. The Disaster Committee members present assumed authority, but communications were inadequate for several obvious reasons. The Committee had no set headquarters at which to receive information and from which to direct personnel. And even if they had, the idle personnel were not in an assembly area apart from the receiving area. It would have been like yelling across a crowded football stadium to try to get an individual's attention.

Actually, there was no real delay in starting treatment for each victim, since sufficient space, equipment, and supplies for the 12 were available in the emergency room area, and enough regular house staff were present to give each individual initial attention.

It was obvious, however, that more than 15 or 20 victims would have inundated the regular areas, and there would not only have been much delay but also much worse confusion in preparing another site, the cafeteria, as a receiving area, and in securing necessary supplies.

No sorting was done, but should have been. Three victims with only 5 per cent of the body surface burned were at first admitted. These burns should have been dressed and the patients discharged from the initial treatment area.

The director of pediatrics did a rapid and efficient job of discharging and removing in-patients from the children's ward so that all victims except the adult could be admitted to one ward. He and his staff were then of much help in identifying casualties and in talking with parents and others at the information center.

The information center was of great value; its importance in maintaining good family and press relations and in keeping treatment areas free of unnecessary traffic was amply demonstrated.

In summary, our experiences with this disaster and in a subsequent, simulated disaster emphasized the fact that, in addition to a written disaster plan, the following steps are necessary before an institution can consider itself prepared to care efficiently for any casualties above its normal emergency room capacity:

1. Specific assignment by name of permanent personnel to duties, and periodic and specific orientation of changing personnel (interns, nurses, and so forth) to their work assignments with the permanent personnel. Alternates should be assigned for each duty.

2. Discussion and agreement by the medical staff, in advance, on principles and policies of sorting and of treatment of various types of injuries (for example, open therapy of burns, debridement of wounds, and so forth). Estimates and storage of adequate supplies cannot be realistic until this is done. Treatment center officers must aid in this planning and stockpiling. Nonsurgical specialists need and are grateful for this orientation.

3. A drill session with simulated casualties (and simulated relatives). Only in this way can efficiency in all phases be perfected in advance of the need. Defects in details of external and internal traffic, of communication controls, and of supplies will become glaringly evident. The greatest value of such a session is the realization by all personnel of the chaos that could exist without a rehearsed plan. Short of a real disaster it is the best missionary tool for any disaster planning committee. The enthusiasm and cooperation of all personnel will rise rapidly and steeply.

### *Treatment of Burns*

Although there was no delay in starting therapy on each of the 12 casualties, early treatment of the burn wounds initiated by separate physicians showed the lack of an over-all policy of efficient handling and conservation of time and supplies. In one patient with 70 per cent of the body sur-

face burned, debridement was done under general anesthesia within an hour of arrival. In another patient with 50 per cent of the body surface burned, debridement was done without anesthesia and a massive occlusive dressing applied. Other wounds were minimally debrided and treated by the exposure method.

As mentioned above, a pre-arranged plan for the immediate care of specific types of casualties is an important phase of disaster planning. The diversified methods of treatment used by us initially definitely testified to the need for pre-planning of treatment at each treatment center.

*Acute phase*

It became evident that except for the severely burned adult teacher, all these patients could be handled in one pediatric ward. The definitive care of the burned patients was assigned to the authors as a team. This was thought advisable in order to assure uniformity and continuity of care as well as to avoid duplication of effort. Responsibility for orders must rest with one man or team. Consultation is permissible, but orders based on clinical judgment of each case must come from one source. This required about 72 hours of continuous duty, a trying experience. If we had had more patients, a second burn team would have been necessary.

The general plan of care was as follows: Indwelling polyethylene catheters were inserted into ankle veins for intravenous therapy. Blood was secured from peripheral veins for typing, crossmatching, and determination of hematocrit, hemoglobin, and blood counts. The least critical veins were used immediately. Indwelling urethral catheters were routinely inserted. Body weights, if unknown, were estimated and fluid therapy instituted. Burned areas were debrided by excision of loose skin. Unbroken vesicles were left intact, but if they became broken, they were debrided. Phisohex was used for cleansing. Sterile gauze sponges were used and no brushes were employed. All personnel wore masks. Sterile gloves and sheets were used, and sterile technique was observed as far as possible.

The open method of treatment was elected in preference to the time-consuming application of cumbersome and costly dressings. Bed cradles were used to prevent sheets from sticking to burned areas, and sterile sheets were used when available. The extremities were placed in positions of function in anticipation of the splinting function of eschar formation. Efforts were made to support the extremities, thereby preventing cracking of the eschars.

Dependent areas in contact with the bedclothes, however, rapidly became wet and required the frequent changing of sheets. Telfa* pads were placed in direct contact with the burned areas. These were easily removed and tended to minimize pain at the time of changing of the dressings. Patients showing any degree of thermal conjunctivitis were treated with Neo-Delta-Cortef ophthalmic ointment.

Fluid therapy was instituted, using a modified Evan's formula: 1 cc. of fluid per pound of body weight per 1 per cent of body surface burned. For example, a 70 pound child with a 40 per cent burn required 2,800 cc. of fluid, consisting of 1,400 colloid and 1,400 electrolyte, plus a basal maintenance—for example, 500 to 1,000 cc. of 5 per cent glucose in water. These figures were rounded out to the nearest 500 cc. because of standardization of commercial fluid containers. All burns, regardless of degree, were treated as though they were of third degree. The extent of body surface burned was rounded out to the nearest 5 per cent; for example, 41 per cent was considered a 40 per cent burn.

During the early phase of anti-shock therapy an hourly urinary output of 25 to 30 cc. was considered satisfactory for these younger patients. Urinary specific gravity and urinary chloride (determined by the Fantus test) were determined hourly. These were only of slight supportive value in management. Dextran seemed to cause fluctuations in the specific gravity within one-half to one hour following administration, the reading being as high as 1.060 with a very light colored urine. Those with a normal or near-normal urinary excretion of chloride seemed to respond later in their clinical course than those with decreased urinary chloride values.

For those with burns covering up to 30 per cent of body surface, hemoglobin and microhematocrit determinations were secured by ear or toe puncture techniques every four hours. For burns greater than 30 per cent these determinations were made

*Telfa Pads, Bauer and Black, Chicago, Ill.

every two hours day and night until 24 to 48 hours following the onset of diuresis.

The hourly urinary output and the hemoglobin-hematocrit values were the most helpful laboratory data secured. Actually no blood chemistry determinations were made until the fourth to seventh day of hospitalization, and these were remarkably well within normal ranges.

Whole blood was used during the first 12 hours and then plasma and 6 per cent Dextran in saline were used. The Dextran was used electively during the first 12 hours in the less severely burned patients.

In many of these patients, only the veins at the ankle and foot were available for the repeated intravenous injections that were needed after the original intravenous catheters had become occluded. It was possible to perform open phlebotomy using incisions of 0.5 to 1 cm. in length. A piece of polyethylene catheter was inserted through a small nick in the vein as one would insert a needle, without the use of ligatures. This method permitted the smaller veins to be satisfactorily punctured without sacrificing the larger tributaries, thus decreasing the incidence of thrombosed veins from poor punctures or extravasations from movement of extremities by the patient. Scalp Vein Infusion Sets* (hubless needles attached to plastic tubing) became invaluable in preserving veins, and were used for both electrolyte and whole blood infusions. A syringe was needed to force adequate volumes of blood through these small sets. By this method concentrated serum albumin was administered daily or on alternate days to severely burned patients in an effort to maintain plasma albumin levels.

Contrary to certain ideas presented in the general literature, the early feeding of burned patients is much more easily said than done. The more extensive the burn, the less readily does the patient tolerate oral fluids. Generally, burn patients commence taking fluids on the second or third day, but sometimes later in their hospital course. Nasogastric suction may become necessary at times to combat ileus during the acute phase.

*Nursing care*

The nursing care of these patients was most demanding for weeks because of the extent of second and third degree burns involving the face, neck, and hands. Many could neither see, feed themselves, nor care for their personal needs. Constant 24 hour care was necessary not only to manage the intravenous fluids, measure urinary output, and maintain the extremities in a satisfactory position, but also to allay the fears of these young patients.

It was found advantageous to have circulating nurses or ward aides bring nourishment, drugs, and sickroom supplies to the rooms rather than have the special nurses leave their patients. It was felt that this method entailed less risk of infection than having the special nurses trying to supply themselves from some central source.

It was necessary to put two patients in each room, and, depending on the severity of the burn, to assign two special nurses to the room. It was most interesting to note the effect of the two patients upon each other in boosting morale. Each sympathized with and encouraged the other, and both showed an intense interest in the welfare of other classmates on the ward. All these children developed an intense *camaraderie* engendered by having gone through the same trying and painful experience, and they in turn were considered heroes by their more fortunate classmates and schoolmates who were not seriously burned. Months later when most of these children, even with markedly deformed features, had returned to school, they were accepted by their classmates and not subjected to the cruel derision and ostracism which often occurs when a lone victim of a fire returns to his community.

Despite the extensive face and neck burns of these patients it was necessary to perform only one emergency tracheotomy, that on the severely burned adult. She died on her sixth day from extensive respiratory tract burns, in addition to burns affecting 70 per cent of the body surface. Two elective tracheotomies were performed, one on the fourth day and another after the first month. The first was thought advisable because of extensive face burns, laryngeal stridor with respiratory distress, and some difficulty in swallowing; and the other was necessary for adequate control of anesthesia during grafting upon the face. Another patient coughed up sooty, blood-stained sputum for four to five days follow-

*Scalp Vein Infusion Sets: Abbott Laboratories, North Chicago; and Mead Johnson and Co., Evansville, Indiana.

ing the burn, but there was no other respiratory distress. Another patient with extensive second degree burns of the face seemed to be a candidate for a tracheotomy on his third day when he became strangled, but after expectorating two large ascaris worms, he had no further difficulty.

*Therapy in later phases*

By the end of the first week the acute phase was over, and the patients entered the phase of sloughing and healing. Surface infection was inevitable, and antibiotics were given in rotation in an effort to control sepsis. In our efforts to get raw areas covered as rapidly as possible, it was necessary in several cases to graft the upper arms before the third degree sloughs had begun to loosen on the forearms and hands. This required immobilization of both areas in the same dressing; yet fortunately most of the grafts, many of small, postage stamp size, survived even in a sea of purulent secretions from contiguous areas. At subsequent dressings, performed under anesthesia, further debridement was done; and, where possible, a period of wet soaks was used on the granulating surfaces for several days prior to the grafting of these areas.

Sites for donor skin were carefully guarded, and very thin grafts, 0.012 inches in thickness, were taken, so that these donor sites could be used again after three weeks. Many areas were used three times, and a few, four times.

In the most severely burned, repeated whole blood transfusions were necessary to maintain and support healing. Failure of grafts to take or donor sites to heal was an indication for more vigorous protein therapy in the form of forced feedings and blood and albumin transfusions. Although total serum protein values were maintained at more than 5.5 Gm. per 100 cc. of serum, the albumin fractions were in several instances less than 2 Gm., the globulin fraction being significantly increased to more than 4 Gm.

Homografts from the father of one quite toxic patient were applied five weeks after the burn because neither donor nor grafted areas had healed. The patient improved noticeably and most of the homografts survived four weeks, 50 per cent five weeks, but none as long as six weeks.

**Table 1**
**Summary of Patients**

| Case No. | Age | Sex | Initial hospital days | Per cent body surface burned | Units blood* | No. operations | Anesthesia time hrs. | Anesthesia time min. |
|---|---|---|---|---|---|---|---|---|
| 1 | 9 | F | 248 | 70 | 17 | 20 | 56 | 30 |
| 2 | 10 | M | 244 | 50 | 27 | 15 | 40 | 10 |
| 3 | 10 | F | 68 | 50 | 3 | 3 | 10 | 50 |
| 4 | 8 | M | 117 | 30 | 8 | 10 | 33 | 30 |
| 5 | 11 | M | 50 | 30 | 2 | 2 | 6 | 15 |
| 6 | 10 | M | 61 | 25 | 3 | 4 | 14 | 30 |
| 7 | 10 | M | 21 | 15 | 0 | 1 | 3 | 30 |
| 8 | 8 | M | 19 | 15 | 0 | 1 | 1 | 25 |
| 9** | 53 | F | 5 | 55 | 5 | 1 | | |
| 10 | 9 | F | out-pt. | 5 | | | | |
| 11 | 10 | M | out-pt. | 5 | | | | |
| 12 | 10 | M | out-pt. | 5 | | | | |
| Total | | | | | | | | |
| Total | | | | | | | | |
| 12 patients | | | 833 | | 65 | 57 | 169 | 40 |

*Exclusive of Dextran

**Also received 1000 cc. plasma. Had tracheotomy. Died of respiratory burns

During this time older donor sites healed and fresh autografts were successful.

The two most severely burned patients were in critical condition for three months. By the fourth month all the patients were out of danger and progressing satisfactorily. It was most encouraging as patient after patient, after a grafting procedure, suddenly became less toxic, ate better, and began healing rapidly.

*Summary of data*

Figure 1 summarizes the significant data from these patients during their initial hospital stay. It is of interest to note the differences between each of the patients having 50 per cent of the body surface burned and of those with 30 per cent burned. Those having a preponderance of third degree burns stayed in the hospital longer, received more units of blood, and underwent more operations in sharp contrast to those having mostly second degree burns.

We feel fortunate that all of the children survived, yet in retrospect we believe that the periods of toxicity and initial grafting might have been shortened in some by more use of homografts and by better local care of circumferential burns with the patients on Stryker frames.

*Cost of Medical Care*

The expense of the care of these burned patients has so far been staggering. It has entailed not only hospitalization, numerous operations, expensive antibiotics, blood,

**Table 2**

**Cost vs. Insurance Coverage**
9 cases (850 patient days)

| | |
|---|---|
| Hospital charges | $19,516.61 |
| Nurses fees | 21,809.00 |
| Total | $41,325.61 |
| Insurance paid hospital | $17,775.84 |
| Insurance paid doctors and nurses | 5,096.55 |
| Total | $22,872.39 |

and so forth, but special nursing care, absolutely essential since the patients were not able to take care of themselves.

The cost of medical care, exclusive of doctors' fees and the amounts paid by all insurance, is summarized in table 2. The Red Cross, from the outset, not only supplied blood, transportation, and other services, but also assumed responsibility for providing all private nursing coverage necessary above that paid for by the various insurance plans. The largest single initial hospital bill was $5,627.15, and the largest nursing charge for a single patient $9,005.59.

The total expense for plastic reconstruction and rehabilitation for at least 6 of these patients has yet to be determined. The severely burned have been, and will need to be, readmitted many times for staged procedures to release contractures and improve appearance and funtion. A conservative estimate will place this additional expense at about $40,000, making an estimated over-all cost of about $80,000. The Crippled Children's Section of the North Carolina State Board of Health has already cooperated to a great extent in providing for these readmissions.

The school insurance has been a blessing for all of these patients in helping meet the staggering expenses. Fortunately, all of the students were covered by this insurance. Credit should be given to Dr. R. B. C. Franklin, Surry County health officer, to Mr. J. S. Gentry, superintendent of Surry County Schools, and to the Surry County Board of Education for endeavoring to assure complete coverage of all students and teachers, and to the principals and teachers for pushing the program.

Mr. Gentry writes:

> Under the insurance plan offered the Surry County schools by Pilot Life Insurance Company of Greensboro, all of the children of the County schools are covered if 90 per cent of our enrollment takes the insurance.

**Table 3**

**Value of School Insurance**
$2,500 Medical Expense for $1.25

| | |
|---|---|
| Total claims | 41 (2 teachers) |
| Total medical expenses | $19,989.56 |
| Total death benefits | 3,000.00 |
| Total all claims | $22,989.56 |

> Realizing that often the ones injured would be the ones that did not have the insurance coverage, the principals and teachers in each school made a special effort to enroll as many as possible in the insurance program. With this special effort, it was possible to take the blanket coverage for all of the schools of the County. It was understood that where a school did not reach the 90 per cent that the school would underwrite the balance. So far, all of our schools have been able to collect suffiicient fees for this coverage and the insurance program has paid its own way.

At the time of the fire the premium was $1.25 per year for $2,500 medical expense coverage for accidents. Claims paid toward the expenses of 12 patients treated by us totaled $16,771.14. The total amounts for all claimants from this fire paid by school insurance alone was $22,989.56 (table 3).*

*Summary and Conclusion*

The problems encountered in the management of 12 burned patients from the Flat Rock School fire in Mount Airy re-emphasizes the importance of disaster planning for any hospital. With even this small number of casualties, considerable confusion prevailed initially, routines were disrupted, wards re-apportioned, laboratories overworked, and personnel imprisoned by important routines. Round-the-clock nursing by physician and nurse was required.

Burn therapy is discussed in the light of setting up a uniform system of care of similar patients to prevent duplication of effort and maximum efficiency in care. Three patients were treated as out-patients. The only death occurred on the sixth day. The longest initial hospital stay was 248 days, and the over-all, initial hospital stay for the group was 833 days. Total initial cost of medical care exclusive of professional fees was $41,325. The school accident insurance program paid a total of $16,771.14 toward the care of these patients, and a total of $22,989.56 for 41 separate claims from this one fire.

Our experience with this small group of

*Personal communication from J. M. Atwater, Pilot Life Insurance Co., Greensboro, N. C.

casualties has done a great deal to crystallize our thinking in planning for catastrophies. We would urge upon every community the necessity not only for making a disaster plan but also for having an actual demonstration or trial run to iron out the deficiencies which will show up in any such undertaking. We feel fortunate that our "baptism by fire" was by a group of casualties small enough to be handled adequately, but large enough to convince us of our need for planning in advance of need.

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## The Medical Spectator

As the utility of drugs may wax and wane, so may the reputations of men. Mass media are persuasive enough in these times so that most men and drugs may have their ranks charted. With drugs, a delicate dose of antiquity blended smoothly with stainless steel and laced with promise has proved effective in development and merchandizing, while a pleasing television smile and a soothing voice can resurrect politicians long past their primes.

The rise of neurochemistry easily permits just such a curve of repute to be drawn. For the sake of discussion, let Reserpine be selected (fig. 1). For generations, nay centuries, Rauwolfia extracts have found favor in Indian medicine, formal or village. With westernization, the drug was looked upon as little more than a floral mud pie until hypertension, that hallmark of civilization, demanded attention and the snake root was restored. More recently hallucinogenic mushrooms, ritual materials once, have reached the laboratory, and it is quite possible that shamans, witch doctors, and other early healers may have induced visions of therapeutic value in patients with the psychosomatic difficulties inherent in hunting and gathering.

For Reserpine, one might substitute J. Robert Oppenheimer* and find the camel-hump graph still appropriate. In the not too distant past his motives and even his respect for our mores were suspect and his moderating influence was felt too dangerous for our power and too sceptical for our democratic dogmas. Now with time proving him right, with his foes falling on the shores of shrillness, overhelmed by their own echoes, his shield is shiny once more.

One reason for this, I think, is Dr. Oppenheimer's capacity to "unlearn" things. In a recent magazine article[1] in which he discussed in the broadest sense "The Tree of Knowledge," he points out that "nearly everything that is now known was not in any book when most of us went to school; we cannot know it unless we have picked it up since." This requires discrimination in learning and an ability to recognize and reject the superfluities of fact and fancy which have always been a part of daily life. The curriculum of the medieval medical school at Salerno seems remarkably broad in an age when the symptom was the disease; yet a chance reading of an early Osler textbook by the Reverend Mr. Gates led to the Flexner study of American medical education on a small Rockefeller grant and the establishment in this country of medical schools as adequate for our times as was Salerno's in its heyday. Something had happened to dim the critical spirit in the long interim.

The crux of these problems seems to be self-education, particularly the further education of that self, wrought by this trauma and that stress, lectured at and talked to, reasoned with and audio-visualized beyond

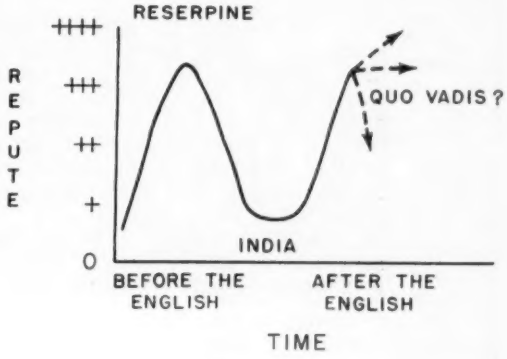


Figure 1

*Aldous Huxley could easily be substituted for Oppenheimer and is perhaps a more logical candidate for comparison. From the delights of *Point Counterpoint* he passed into the trough and only recently has been on a sort of upswing, with setbacks *(The Genus and the Goddess)* since. Recently he discussed neurochemistry in the *Saturday Evening Post* and earlier delivered the same message (in slightly different form) before the New York Academy of Science.

description during the years of enrollment. Nobody tells us what to forget; that we must find out for ourselves. "We know that we are ignorant; we are well taught it, and the more surely and deeply we know our own job the better able we are to appreciate the full measure of our pervasive ignorance."[2] Even though we have statistics "which in the end made room for human ignorance as an explicit factor in estimating the behavior of physical forces,"[3] we have devised ways to retain our illusions, using the necessary but invalid frontal lobe behavior formulae.

It is the nature of business to equate good with profit all too frequently and to condemn a damaging truth to extinction by piling up the adjectives of ignorance and the endorsements of the uncritical which are strong enough to obscure that truth for a time. Yet this is educational, for somewhere in the market place error is identified and so labelled; for this reason such give and take must be considered a sign of intellectual health. On the other hand there is a school of pharmaceutical-house thought which suggests that advertising and detailing are educational features to be measured in the volume of circulars and the number of samples sent. One such benefactor has recently gone cultural, identifying Nefertiti and Botticelli's maidens with one of the their endocrine preparations—a fair drug in an overworked, overdetailed, underindicated field. If the association with Nefertiti is based on the fact that she was Ikhnaton's queen during the most enlightened phase of early Egyptian culture and that the famous sculptured head of her represents the best in Egyptian art, figuring out the ad is harder than checking its bibliography. Ikhnaton's monotheistic religion withered after his death; perhaps this is in some way related to the message about the drug. Botticelli's maidens are so ethereal as to defy equating drug and damsel. They may need iron, granted, but their features aren't such to suggest hypopituitarism, an indication for the use of the drug in question. On analysis, then, this information appears to qualify to be "unlearned."

Instead of the hard sell, the memorized spiel, the graphic charts (the loose-tongue loose-leaf approach) our drug manufacturers might be better advised to point out the shortcomings of their drugs and be less expansive in their claims. In this way our ignorance is identified and we can avoid it when dealing with patients. After all, a faint whiff of mendacity has not always been part of that apothecary smell, and many a physician today is too much a slave to time and the telephone to separate truth from some of the gentle fiction now given credence.

### *References*

1. Opperheimer, J.R.: The Tree of Knowledge, Harper's Magazine 217:55-60 (Oct.) 1958.
2. Opperheimer, J.R.: Science and Common Understanding, London, Oxford University Press, 1954, p. 99.
3. *Ibid.*, p. 14.

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. . . witness the space devoted in the commercial exhibits to the ataraxics. Their increasing use in other than psychotic patients is a tacit admission that we have created a culture we are having difficulty living with. But while drugs are wonderful crutches, Mother Nature does have a way of reasserting herself. We may be able today, with the help of a prominent pharmaceutical house, to dial the mood we wish to allay, and read off the proper tranquilizer. I doubt very much if this is the answer for tomorrow. Beckman's statement on this subject seems particularly appropriate: "The continued promiscuous prescribing of tranquilizing drugs is to put the sign and seal of doom upon the human race as the highest of evolved creatures."—Neel, J. V.: Editorial: Medicine's Genetic Horizons, Ann. Int. Med. 49:476 (Aug.) 1958.

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## ANOTHER HOSPITAL HAZARD— THE BEDSIDE CARAFE

Recently much has been written about the increasing hazard of hospital infections, especially staphylococcal. This increase has been attributed to the widespread, indiscriminate use of antibiotics and the custom of depending upon them instead of on rigid asepsis. The operating room and the nursery have been the chief targets of investigation.

An article in the *New England Journal of Medicine* for December 18[1] calls attention to another hospital hazard: the bedside carafe. In a survey of 24 Boston hospitals the authors found only 5 of 103 samples of water cultured to be sterile. Coliform organisms were found in 21.7 per cent and staphylococci in 68.9 per cent of the carafes sampled. Among the factors blamed were the careless handling of ice, failure to sterilize carafes after use, and the draining back of saliva into a vessel through a drinking tube. The narrow-neck construction of many carafes made it virtually impossible to clean them without a brush, and bottle brushes were not seen in any of the hospitals.

The authors offered the following recommendations for safe drinking water:

> ... proper installation and operation of ice-cube makers that are isolated from sources of bacteria shed by patients and personnel; automatic bagging of ice cubes and storage at temperatures less than 20° F.; dispensing of ice cubes from refrigerated dispensers with ice tongs; provision of carafes with wide mouths to facilitate cleaning, inspection and filling; daily sanitization of carafes with heat; processing of carafes in the diet kitchen by personnel trained in food-handling precautions and complete emptying and refilling of carafes from the tap each time they are serviced.
>
> A bacteriologic quality control program must be instituted in the hospital to assure bedside water of a quality comparable to the drinking water supplied the community.
>
> Where melting ice is used, it must be dispensed from a solution of sodium hypochlorite.

Editor Joe Garland comments pertinently:

> There was a time when the hospital was with some justice regarded as a house of pestilence, but such a reputation gave way before the advent of the dirt-and-bacteria-conscious era, when soap and water, sun and antiseptics made the modern hospital a scrupulously spotless institution. In recent years, however, too much reliance has been placed on the easy cure of infection to the neglect of common sense if hand-roughening methods of avoiding it. Certain unpleasantly common organisms have again become frequent invaders of those sanctuaries where rigid technics of general cleanliness have been allowed to lapse.
>
> The paper by Walter and his associates on the bacteriology of the bedside carafe, published in this issue of the **Journal**, points a moral regarding this defect in the essentials of hospital housekeeping, even if it does not adorn a tale. Careless attention to the cleanliness of this vessel and its contents, and slovenly habits in the placement of bedpans and urinals in relation to such vulnerable equipment as ice-making machines, all remind one of the late Professor Millton Rosenau's aphorism regarding the shortness of the gap between any person's mouth and the nether end of the alimentary canal of another.

1. Walter, C. W., and others: Bacteriology of the Bedside Carafe, New England J. Med. 259:1198-1202 (Dec. 18) 1958.

## THE RIGHT TO CHOOSE

Medicine has long adhered to the principle that the person who seeks medical care should be free to choose the physician he wants. Serious attacks, however, are now being directed from several sources at this cornerstone of professional practice.

The arguments raised are (1) that the individual cannot be expected to exercise this privilege intelligently because "he cannot appraise the quality of physicians;" (2) financing mechanisms have so altered the physician-patient relationship that traditional concepts no longer apply; and (3) existing legal and professional controls are not sufficient to protect the patient from unethical, incompetent or overcharging physicians. Finally, some reject individual responsibility and prefer collective responsibility for health maintenance.

These attitudes, coming up sharply against medicine's long-standing belief in free choice, have provoked intense controversy in certain areas of our country. Conflict has developed primarily where mangement, union, or "consumer-sponsored" medical care plans have abrogated the principle of free choice. Complicating the picture has been the pre-emption of patients by prepayment mechanisms and sales promotion campaigns. While these conflicts are restricted to relatively few geographic locations at present, their impact on medical care throughout the nation should not be underestimated. The outcome may set a countrywide pattern.

In the long run, it is likely that the ideal of individual responsibility for choice of physician will be retained. Americans generally have strong opinions—whether on the subject of cars, houses, ball clubs, politicians, or doctors—and most of them are used to directing their own lives accordingly. For this reason many will not be attracted to panel medicine.

The fact that such plans do and will continue to exist does not vitiate the basic concept of free choice. An ideal is not compromised because of difficulties encountered in trying to reach it. Medicine can hold fast to the ideal while realistically recognizing deviations from it under certain circumstances.

What men of medicine must do is understand clearly *why* free choice is good and then convince others of their point of view. Free choice to the physician means the challenge of the open market, the incentive of competitive selection, the chance to succeed or fail based on the judgments of many individual consumers, and the opportunity to develop a relationship with the patient undisturbed by outside forces of uncertain motivation. To the patient, it means the privilege of personal choice in an area affecting his life and health; it means the right to change physicians; it means control of the service by the one who receives and pays for the service.

Medicine's obligation is to recognize the self-policing responsibility that is a *sine qua non* of freedom. At the same time medicine must fortify the natural inclination of patients to preserve their right to choose. Finally, medicine must attempt to persuade third-party vendors of medical care, by astute negotiation, that this right should be protected.

* * *

## ARE WE TAKING BLUE SHIELD FOR GRANTED?

We doctors are just as human as our nonmedical friends, and we might as well confess that we share all the perversities of human nature—most of which seem so magnified when people become patients.

One of mankind's most dangerous perversities is to take for granted so many of life's blessings which were secured to us only by heroic effort and sacrifice on the part of our forebears.

Thus it is with our political freedom. As John Philpot Curran warned our infant nation in 1790: "The condition upon which God hath given liberty to man is eternal vigilance; which condition if he break, servitude is at once the consequence of his crime and the punishment of his guilt."

Twenty years ago, when the American Medical Association, in special session, endorsed the principle of voluntary health insurance, American doctors in many scattered places began the long hard task of creating American medicine's own unique instrument that is now known as Blue Shield. Truly, these older brothers of ours struck a great blow for freedom when they built this voluntary prepayment program which now serves one of every four Americans.

# President's Message

*As a project of the Committee on Public Relations authorized by the 1958 House of Delegates, a state-wide Conference for Officers of County Medical Societies was conducted at Pinehurst on January 10, 1959, in which the presidents, secretaries, committee chairmen of county societies, and officers and committee chairmen of the State Society participated.*

*The following is a report of the President's Address before this group, which will constitute the President's Message to the North Carolina Medical Journal January, 1959, issue.*

The importance of this meeting will depend largely on the leadership and the ideas that come out of our discussions. We are meeting in a time characterized by intense, ceaseless struggles by individuals, groups, races, and nations for positions of power and influence. In these struggles the ideals of medicine are involved. We must keep in mind however, that they are not the primary issue. They are involved secondarily in a program of socialized health and welfare. Just what part medicine is to play in guiding its aspect of the program and whether that part will be to the good or detriment of mankind will depend on whether we be motivated by ego and desire for power or by our desire for influence to help guide these programs in a manner and through channels that will result in a minimal loss of the rights of the individual and the maximal use of the facilities of organized society and government.

Already it can be said, and I believe without contradiction, that the movement toward guaranteed medical care and hospitalization for all citizens has gone so far that it will not be turned back. The problem facing us is how we can prevent this movement from destroying the doctor-patient relationship built on moral and spiritual values.

How well we shall do depends largely on our own behavior. We shall have good and bad days. We must not be sensitive; we must not lose our tempers; we must not become paranoid; and should our opponents carry a chip on their shoulders, we must not take it too seriously. We will go further by looking for our own errors while respecting our opponents' strengths and realizing that they are just as ambitious as we and have brains as good as or better than ours. If we can develop cooperative leadership for these programs, we shall learn that no one loses and everyone gains. We must remember that these social welfare programs have been prepared by egg-heads and efficiency experts who believe in economy no matter how much it costs, and they have built on a foundation furnished by fine pioneer programs established originally for good purposes. We must realize that some of our legislators look on these infiltrating socialistic welfare programs as being noble in purpose, forgetting that they are hardly of immediate interest to the people who live close to the realities of every day.

"All through history there has been too great a contradiction between ideals and the forces which have taken over those ideals. Too often we have allowed the best ideals to fall into the hands of the worst men and to be perverted or exploited by those who were looking for a means to an end." That is what is happening to medicine today. In our efforts to participate in these programs, we shall be thrown in contact with people with different backgrounds, different races and religions, and different political, social and moral creeds. These contacts will of necessity bring about either conflict or cooperation. If we are to gain the aims and objectives of our profession, it will be medicine's job to keep the conflicts at a minimum.

### *Responsibility in the Selection of Law-Makers*

We are faced, as always, with the fact that the laws of our land are created in the minds of men, and it is not always possible to influence the thinking or the actions of a man after he is elected to office. He is aware of who influenced his election. He has to accept his obligations as a representative of the group that elected him, even though sometimes he goes against his own opinion. We should not be too critical of those selected by others to represent them when we played no part in their

election. Likewise we must remember that if a man is to remain in office, he must follow the dictates of those who selected him, guiding their thinking to the best of his ability.

If medicine is ever to be in a position where its members can use their moral, social, and professional background for the betterment of our people, we shall have to be willing to expend time and effort in the daily political struggles within our nation. We shall have to play a part in the election of the men who lead us. Far too long we have placed ourselves in the position of being above participating in such affairs. This idea will have to be changed. There is nothing more important to the world today than the selection of the leaders of the United States of America.

*Participation in Political Affairs*

Medicine must never make the mistake of becoming a political organization, but an even greater mistake would be the failure of those within the framework of medicine to take an active part in the political affairs of the community, county, state and nation, doing so as individuals, each thinking and voting according to his own dictates. Organized medicine's job in this field is to see that its members do so act, but without direction from headquarters.

Those making up our profession have been privileged in most instances to grow up in religious homes, have had the advantage of good secondary and higher education, plus the advantages of the spiritual, moral, and ethical training given during our medical education and growing out of our contact with human beings during times of distress. No group has a better background for leadership. No group should be more aware of the need of that leadership. What has happened to us? Perhaps we have become a bit too sensitive of criticism. Perhaps we feel that such participation would incur a loss of prestige. Nothing could be further from the truth. Look back in your own minds to the doctors of previous generations and you will immediately think of those who have assumed leadership, who have been unafraid, and who have been generous. Any doctor who has not financially and actively supported worthy candidates for election to public office has failed himself, his family, his profession, and his nation. The day is long past when an individual could finance and manage his own campaign for public office. If the right kind of man can be persuaded to seek public office, the least we can do for him is to give him financial and active political support. Medicine will never take a part in the running of our government until it has a voice in the selection of the men who control it, and that selection is influenced by financial donations, by organization of those about us, including our neighbors, our fellow workers and friends, and by seeing that these people exercise the right of suffrage and cast a vote. That is politics. And if it be a crime, I stand before you guilty to the core.

In discussions and meetings such as this, we spend far too much time criticising public officeholders, third parties, and civil service workers. We should turn our magnifying glass toward ourselves. It is there that the faults lie. The trouble with us in the political field is that we sometimes seem not to value our rights nor to accept our responsibilities. Politically we have been lazy. We have been self-satisfied, and I am sorry to say that at times we have acted as if being a doctor made us above being a citizen.

Our right to vote implies a responsibility. Our opportunity to vote is an obligation, and our place in life and our possessions make our voting and seeing that others vote a duty. If we are to participate in these affairs, we must do so with understanding hearts. We must recognize that no group has all the knowledge or right on its side. We must recognize that no problem has any permanent solution. We shall have to develop patience and tolerance, along with courage to stand for our convictions. In our defense of medicine we must not confuse privilege with rights. In these struggles we must remember that only one side can win. When we lose, we should make every effort to help the other side strive toward the creation of a better world.

This reminds me that the Congress of the United States has opened its doors for another session, in which, regardless of which party we may belong to, I am not certain that we as a group will have material representation. This is to be what is called a liberal congress—if that means

anything in these days—and it will be more influential in our lives than perhaps we would like to admit. We had just as well face it; the government is involved in almost every phase of our lives. If we do not recognize this fact first and accept it, we shall be without means not only to control, but even to guide or influence government and protect the role of the individual. Many times in the next months representatives of our profession will visit the legislative offices and halls of our country. We shall have requests to make and suggestions to offer, and many times we shall leave those halls as the Chinese farmer took his departure from a fellow farmer on being refused the loan of his plow. When asked for a reason, the second farmer replied that his wife was using it to cook supper. The would-be borrower said, "She doesn't need a plow to cook supper." The reply was, "Yes, but when you don't want to do something one excuse is as good as another."

We shall find ourselves in the unhappy position of that Chinaman, a position brought on by the practice of medical leadership discouraging participation in politics. Doctors who do not encourage their employees and their friends to participate in political affairs are bad citizens. If politics be dirty—and I am not saying that it is—it is because our citizens have not accepted their responsibilities for keeping it clean. Many times we do not participate in fear of hurting our popularity or of losing friends—and, I am sorry to say, possibly of losing business. We should remember that a zealous man fights for his convictions first and worries about his popularity later. To engage in politics is not to alienate those on the opposite side. The world of politics can be a beautiful world. There is nothing wrong with a Republican thinking a Democrat is a pretty nice fellow, and there is nothing wrong with a Democrat thinking a Republican is a charming individual. Webster's International Dictionary defines the word politician as "a polite person; a statesman; one versed or experienced in the science of government." What more worthy position in life can a man occupy? And it should be remembered that a statesman has to be a politician long before he becomes a statesman, and that there are more statesmen in politics than there are schemers and intriguers.

In these controversies we need not use our arms to wave about or to pound on tables; we can hug someone with them. At the same time we can offer up a prayer for strength and increased admiration for honest dealing and clean thinking, and pray that we suffer not our hatred of hypocrisy and pretense ever to diminish. Most of all we need to pray for perseverance amid discouragement and failure and for grace to be steadfast when we are misunderstood and ridiculed, even when such ridicule cuts to the core and makes us conscious of how much we have received and how little we have given.

Our legislators, both state and national, will need help. Neither they nor any man can be right all the time. Had we participated in their selection, we would be in a better position to advise them. Just how much they may listen to us under the circumstances is questionable, but we must remember that they can be only as well informed concerning our problems as we allow them to be. We may rest assured that factions opposing what we consider good health and hospital programs will tell their side of the story. If we do not give our representatives the information they need, they can only act to the best of their abilities, and we must remember that many times they know little or nothing about the problems concerned. In their discussions, new material and ideas will be introduced which can be appropriately absorbed into the present health program of our country without upsetting a balanced proportioning of private and public medicine. If we do not open our minds to some of these new ideas, the absorption may be the other way. Our contact with our legislators should be through people whom they trust and know, usually those who participated in their campaigns. I hope we have a sufficient number of doctors in our membership to be able to make such contacts.

One fact we must recognize: Many changes have occurred in the health programs of our country. Whether these changes be good or bad, they have occurred and medicine must furnish a leadership that will see that our doctor-patient relationship is not disturbed and that bet-

ter health programs are available to all regardless of how the programs are financed. If medicine takes this leadership in an effort to save for America a proud and dedicated profession, we shall be confronted in some areas with the necessity of an occasional change of mind and a rearrangement of our prejudices. There will be occasions when we cannot solve our programs. We shall have to discipline ourselves and learn to cope with difficult situations. We shall need to become astute politicians and statesmen. We shall have to learn the art of compromise without straddling a fence and without losing the site of our goal.

This reminds me of a story about a goat that was being shipped express with a tag of destination about his neck. The man in charge of the express car was distressed when he discovered that the tag was gone. "Dat goat," he exclaimed, "done eat up where he gwine!" We should know where we are going and we should not destroy the tag that shows our destination. Our major effort should be to furnish a constructive contribution closely in league with the future. In our struggle we must preserve the proper relationships with each other and with the public. Two years ago Donald Koonce, in his presidential address, stated: "The doctor's first and primary obligation is the individual welfare of his patieents." He made an interesting diagnosis of a disease now afflicting civilization, calling it "the disease of socialism." He pointed out that we had met the challenge of physical disease, and asked, "Is it too much to believe that we are capable of combating the disease of socialism?" I personally do not believe it is beyond us. The answer rests in strengthening our moral and spiritual fiber and in raising the intellectual, moral and spiritual life of our people. We do not help men by giving them money or free services. This is the way to harm them, as we are only ministering to their immediate physical needs. The basic weakness of public welfare and socialized medical programs is that they provide material benefits without motivating the individual to improve his own lot, no matter how unselfish or concerned the donor may be.

These government aids are built on hypocrisy and pretense. They are like the story of the man who found a poor hungry dog. He took his knife and cut off part of the dog's tail, fed it to him and said, "I won't let you starve."

It is easy for some of these socialistic welfare state promoters to gain a reputation for generosity. All they need to do is to tax quietly and give loudly. At one time this was a free land where no one was forced to earn his living and where a lazy man was not pampered with gifts. Each was free to get rich or to be hungry. Most people found it pleasanter to work and prosper.

We have drifted far away from our original ideals. There are not too many outspoken champions of individualism left in this world of brain-washing, mass propaganda, and thought dictation. What is to become of these political problems none of us knows, but certainly they will influence your future. If they are to influence your future, you should take a real interest in them, as your future, the structure of which will be planned and built by politicians, is where you are to spend the rest of your life.

If I were to close this discussion with a prayer, I would not pray that we always get our way. I would not pray that the Twentieth Century be repealed, but I would pray:

Lord, in this hour of tumult,
Lord, in this night of fears,
Keep open, oh, keep open,
My eyes, my heart, my ears.

Not blindly, not in hatred,
Lord, let me do my part;
Keep open, oh, keep open,
Dear Lord, my eyes, my mind, my heart.

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I wonder, as you look back into history, how it would have been written today had Winston Churchill retired at 65. It would have been the year of Pearl Harbor.—Rusk, H. W.: Stress in the World: The Individual and the Doctor, Med. Ann. District of Columbia 27:260 (May) 1958.

# BULLETIN BOARD

## COMING MEETINGS

**University of North Carolina School of Medicine, postgraduate medical courses:** First District Medical Society—alternating between Ahoskie, Edenton, and Elizabeth City, Wednesday afternoons and evenings during January and February; Goldsboro course at Goldsboro, Thursday afternoons and evening during January and February.

**The Governor's Conference on Occupational Health**—The University of North Carolina School of Medicine, Chapel Hill, February 5.

**Sixth Annual Seminar on Occupational Health**—University of North Carolina School of Medicine, Chapel Hill, February 6.

**Atlanta Graduate Medical Assembly, Annual Meeting**—Atlanta-Biltmore Hotel, Atlanta, Georgia, February 16-17.

**Sixth Annual Seminar on Cardiovascular Diseases**—Prudential Auditorium, Jacksonville, Florida, February 19-21.

## NEW MEMBERS OF THE STATE SOCIETY

The following new members joined the Medical Society of the State of North Carolina during the month of December, 1958:

Dr. David Armon Williams, 3009 Trenton Road, Greensboro; Dr. Edna Calderwood Thayer, 5205 High Point Road, Greensboro; Dr. John Elliot Lyday, 2205 Briarwood Drive, Greensboro.

## NEWS NOTES FROM THE DUKE UNIVERSITY SCHOOL OF MEDICINE

A new step in the direction of better hospital-press relations has been taken at Duke University with the preparation of a booklet entitled "Doctors and Reporters."

The seven-page guide is designed primarily to assist admitting officers and other Duke Medical Center personnel who may be asked to provide information for new media. Prepared by the Duke University Bureau of Public Information in cooperation with the Duke University Medical Center, the booklet is based upon procedents that have proved successful at Duke and elsewhere.

Included in the booklet are statements of policy governing release of information about accident and violence victims, hospitalized celebrities, deaths, births, medical research and hospital business. The booklet also outlines Duke Hospital policies concerning interviews, press photographs, and use of doctors' names in news releases.

An introductory note states that the guide is intended "to provide the framework for a clear-cut cooperative relationship between Duke Hospital and the various news media within the limits dictated by the hospital's obligation to its patients in terms of the patient's right-of-privacy and his physical welfare.

The booklet has been distributed to local area newspapers and radio and TV stations as well as to key personnel throughout the Duke Medical Center.

## NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Bowman Gray School of Medicine has received a $71,794 grant from the National Institutes of Health for research on uterine blood flow and changes in circulation during pregnancy.

Dr. Frank R. Lock, professor and chairman of the Department of Obstetrics and Gynecology, is the principal investigator. Other members of the faculty will assist in the work.

The investigation is aimed at a better understanding of circulation in both pregnancy and nonpregnancy and the relation of circulatory defects to anomalies in the offspring.

The study will make use of the electromagnetic flowmeter of the surgical probe type developed at Bowman Gray by Dr. Merrill Spencer and Dr. Adam B. Denison.

This apparatus measures the flow of blood through a vessel by surgical application of a probe containing a pair of electrodes and strong electromagnets. The accuracy of the instrument has been proven in many chemical tests.

The study will be carried out on experimental animals first and later on human subjects. It will be an expansion of circulatory research which has been under way at the school for several years and will complement other current studies concerned with mental retardation and brain injury.

The study was made possible by the additional space provided by Bowman Gray's new $2,000,000 research wing.

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Dr. Felda Hightower, associate professor of surgery, was awarded the first annual Arthur M. Shipley Medal of the Southern Surgical Association at its recent meeting at Boca Raton, Florida.

The award was for the best paper presented at 1957 meeting. The paper concerned Dr. Hightower's continuing study on the "Regeneration of the Mucosa of the Colon Following Its Removal in Short Segments."

The medal is presented annually to the fellow who is the author of the paper adjudged to be the best presented at the first meeting following his election as a fellow.

Dr. Richard T. Myers, assistant professor of surgery, was recently named a fellow of the association, which limits membership to approximately 250.

Bowman Gray has transferred its adult psychiatric program from Graylyn Hospital to N. C. Baptist Hospital, teaching hospital of the medical school. The transfer was completed in early January.

Dr. C. C. Carpenter, executive dean, said the decision to shift the adult psychiatric unit was the

result of a two-year study of ways to strengthen and coordinate undergraduate teaching and patient care.

The transfer brought the program under one roof for the first time since the program began in 1946. Graylyn is located about two miles from the hospital and medical school.

Dr. Carpenter stressed that only the adult psychiatry unit at Graylyn, former estate of the late Bowman Gray, was affected by the move. The related programs for physically and mentally handicapped children, a child guidance clinic, and reading and speech clinics continue to operate on the Graylyn grounds.

Psychiatric patients are now being admitted to Baptist Hospital's psychiatry unit which was not being used because of the availability of space at Graylyn. The unit is located in the hospital's South Wing which was built about five years ago.

The psychiatry staff has offices in the medical school building. Members are Dr. Angus Randolph, associate professor and head of the department; Dr. Richard C. Proctor, assistant professor; Dr. Joseph Cutri, assistant professor; and Dr. Marcus Gulley, instructor.

Joseph Grassi, clinical psychologist, continues as executive director of Graylyn.

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Bowman Gray's administrative offices have moved to the entrance floor on the new research wing. Other departments were expected to occupy their portions of the new building by February 1. Opening of the new facilities more than doubles the physical size of the medical school.

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Dr. Luther C. Hollandsworth has resigned as instructor in anesthesiology to enter private practice at the Robeson County Hospital at Lumberon. His resignation was effective November 1.

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Dr. Richard C. Proctor, assistant professor of psychiatry, was visiting professor of psychiatry for one week during January at the University of Texas Medical Branch, Galveston. He also recently delivered a series of six lectures on "The Law and the Mind" for second and third year students of the Wake Forest College School of Law.

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Dr. Marcus Gulley has been transferred to full-time faculty status with the rank of instructor in psychiatry. He is a graduate of Bowman Gray. He has had offices in downtown Winston-Salem for several years.

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Research and training grants recently received or allocated include the following:

The American Cancer Society Institutional Grant Committee at Bowman Gray approved an application by Dr. I. Meschan, professor of radiology, for $614 to study "The Utilization of Viable Tissue Culture of Walker Carcinoma 256 to Determine the Relative Biological Effectiveness of Telecobalt Radiation as Compared with Orthovoltage Radiation"; and an application by Dr. Harry Carpenter, instructor in pathology, to finance "A Study of the Growth Parameters of Embryonic Tissues in Vitro."

Dr. James A. Harrill, professor of otolaryngology, has received a $13,302 continuation otolaryngology training grant from the Public Health service.

Dr. C. L. Spurr, professor of internal medicine, has received a $29,847 continuation grant from the Public Health Service for "Cooperative Chemotherapy Studies in Acute Leukemia."

Dr. Martin G. Netsky, professor of neurology and neuropathology, has received a $23,868 continuation neurology training grant from the Public Health Service.

## News Notes from the University of North Carolina School of Medicine

Dr. William P. Richardson, assistant dean for continuation education, has announced programs for two postgraduate medical courses for practicing physicians to be held in the First Medical District (Ahoskie, Edenton, and Elizabeth City) and Goldsboro during January and February.

The First Medical District programs will meet on Wednesday afternoons and evenings for six weeks, beginning January 14, and the meeting place will alternate each week between Ahoskie, Edenton, and Elizabeth City. In Ahoskie the meetings will be held at the Nurses Home, Roanoke-Chowan Hospital; in Edenton, at the Hotel Joseph Hewes; and in Elizabeth City at the Elizabeth City Country Club. The Goldsboro course will meet at the Hotel Goldsboro on Thursday afternoons and evenings for six weeks, beginning on January 15.

Instructors for these courses include: Dr. Warner L. Wells, Surgery, University of North Carolina School of Medicine; Dr. Allan L. Friedlich, Medicine, Harvard School of Medicine; Dr. Felda Hightower, Surgery, Bowman Gray School of Medicine; Dr. James F. Donnelly, Obstetrics and Gynecology, University of North Carolina School of Medicine; Dr. Warren E. Wheeler, Pediatrics, Ohio State University School of Medicine; Dr. Bayard Carter, Obstetrics and Gynecology, Duke University Medical School; Dr. Kerr L. White and Dr. Myron G. Sandifer, Jr., Psychiatry, University of North Carolina School of Medicine; and Dr. Louis Krause, Medicine, University of Maryland School of Medicine.

These program are sponsored by The School of Medicine and the Extension Division of The University of North Carolina in cooperation with the First District and Wayne County Medical Societies.

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Dr. Lucie Jessner, professor of psychiatry, gave two lectures at the Veterans Administration Hospital in Lexington, Kentucky, on Thursday and Friday, December 18 and 19. Dr. Jessner spoke on special problems in adolescence and presented a case seminar.

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The University of North Carolina School of Medicine will be host to the Third Annual Governor's Conference on Occupational Health on Thursday, February 5, 1959.

This conference is sponsored by the North Carolina Occupational Health Council and will present a program featuring leaders in industry and industrial health in North Carolina and the nation.

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The University of North Carolina School of Medicine will sponsor the Sixth Annual Seminar on Occupational Health to be held in Chapel Hill, North Carolina, on Friday, February 6, 1959.

Other sponsors include the Occupational Health Committee of the Medical Society of the State of North Carolina and the Liberty Mutual Insurance Company.

Special invitations will be sent to doctors in Virginia and South Carolina.

Speakers for the program are R.E. Gordon, Industrialist, Asheville; Dr. R.W. Borden, Part Time Industrial Physician, Goldsboro; Irene D. Courtenay, R.N., N.C. State Board of Health; Dr. Joe M. Bosworth, Regional Medical Director, Liberty Mutual Insurance Company, Atlanta; Dr. B. Dixon Holland, Secretary, Council on Industrial Health, A.M.A.; Dr. Elva Burgess, Industrial Psychologist, Charlotte; Dr. Eugene Van der Smissen, Division of Radiological Health, U.S.P.H.S.; and Dr. Thomas B. Barnett, Associate Professor of Medicine, U.N.C. School of Medicine.

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Dr. Louis G. Welt of the University of North Carolina School of Medicine was guest speaker at the seventh annual Gaston Memorial Hospital Symposium in Gastonia Thursday, December 4. His subjects were "The Management of Dehydration" and "Electrolyte Abnormalities in Patients with Congestive Heart Failure."

Dr. Welt has published a number of scientific papers and is author of the book, "Clinical Disorders of Hydration and Acid Base Equilibrium."

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Dr. James E. Somers, instructor in psychiatry, attended the Southern Regional American Psychiatric Association divisional meeting in Miami, Florida, recently. Dr. Somers presented a talk entitled, "Six Hundred Patients with Conversion Reactions." Dr. Wilfred Abse, professor in psychiatry, was the discussant.

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Two visitors lectured in the Department of Psychiatry at the Medical School recently. Dr. E. James Anthony spoke on "Sleep Disturbances." He is acting director of the Child Guidance Clinic of the Washington University School of Medicine in St. Louis.

Dr. Fred P. Robbins of Chicago spoke before the department's monthly scientific meeting. His subject was "The Problems of Consensus."

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The Section of Physical Therapy of the University of North Carolina School of Medicine had two important professional visitors recently. The first was Miss Hanamarie Heinsen of Kiel, Germany. She is a graduate physical therapist, who is visiting in the United States, and has been temporarily teaching and practicing at the Medical College of Virginia in Richmond in the Baruch Center of Physical Medicine. She lectured and demonstrated to UNC students Bindegeswesmassage, which is a special technique based on neurological development and neurophysiological concepts.

Also the section had as a guest lecturer, Miss Naomi Rasmussen of Lumberton. Miss Rasmussen is a graduate of the Skodsborg School of Physiotherapy in Denmark. She has been in this country for many years and is a registered physical therapist in the state and is functioning as a physical therapist for the Cumberland and Robeson County Chapters of the North Carolina Society for Crippled Children and Adults. Miss Rasmussen lectured and demonstrated on the differences in technique in massage as taught in Denmark and Europe.

* * *

Miss Joan V. Williams has recently joined the staff of the Psychological Services at N. C. Memorial Hospital with an appointment as instructor of psychology in the Department of Psychiatry.

She also continues work in her field of major interest, research in psychotherapy, as research associate with Dr. Hans H. Strupp of the Department of Psychiatry.

Miss Wiliams received her B.A. degree from Bryn Mawr College and has done her graduate work at the University of Michigan where she will receive her Ph.D degree in 1959.

* * *

Dr. Cornelius T. Partrick of the University of North Carolina School of Medicine has been awarded a one-year Mead Johnson Residency Scholarship.

Dr. Partrick, a native of Clinton, did his undergraduate work at the University of North Carolina and received his M.D. degree from the UNC School of Medicine in 1954. At the present time he is a senior assistant resident in medicine. The Scholarships are valued at $1,000.

His internship and assistant residency was served at the Boston City Hospital from 1954 to 1956. He has been in the army for the past two years.

The scholarships are administered by the American College of Physicians. The Mead Johnson scholarships were established by a grant from the Mead Johnson and Co. five years ago. The awards are for graduate study in the various fields of medicine.

* * *

Dr. David A. Young, clinical professor of psychiatry, attended the meeting of the American Psychoanalytic Association in New York City recently. He is chairman of the Association's Committee on Public Information.

* * *

# The age of dreams...

**F**ulfillment of a young girl's dreams needs the help of a doctor, teacher and parent—for development of good habits for healthful living.

Studies show that many teen-age girls have poorer nutrient intakes than have younger or older girls . . . or boys of the same age . . . yet they are more often overweight. Skipping breakfast and depending on high-calorie, low-nutrient snacks for energy aggravates the problem.

The diets of these girls are poorest in iron and calcium. Deficiency of these minerals is not easily overcome, particularly during adolescence, pregnancy, and lactation . . . the periods of greatest energy and nutrient needs in the lives of girls and women. Today's early marriages mean that motherhood frequently follows closely upon the adolescent period, increasing the relative importance of a good diet at this time. The diets of teen-age girls will meet recommended allowances with respect to iron and calcium and other nutrients if they regularly consume four cups of milk daily, with liberal amounts of meat, fruits, vegetables, and cereals.

Four to six cups of milk each day . . . to drink . . . used in food preparation . . . as cheese or ice cream . . . will provide the calcium needs of teen-age girls . . . and generous quantities of high quality protein and other essential nutrients.

In planning meals for teen-age girls, *milk and milk products are foundation foods for good eating and good health.*

*The nutritional statements made by this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.*

*Since 1915 . . . promoting better health through nutrition, research and education.*

**NATIONAL DAIRY COUNCIL**
*A non-profit organization*
111 N. Canal Street • Chicago 6, Ill.

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This information is reproduced in the interest in good nutrition and health by the Dairy Council Units in North Carolina.

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| High Point-Greensboro | Winston-Salem | Durham-Burlington-Raleigh |
| 105 Piedmont Bldg. | 106 N. Cherry St. | 310 Health Center Bldg. |
| Greensboro, N. C. | Winston-Salem, N. C. | Durham, N. C. |

The University of North Carolina School of Medicine has been awarded $10,000 in a grant from the Hemo-Cardiac Foundation, Inc.

These funds are to be used to help carry on basic blood studies now being conducted at the University under the direction of Dr. Kenneth M. Brinkhous, professor and chairman of the Department of Pathology. They are for the unrestricted use of Dr. Brinkhous in such manner as in his judgment will be most helpful in the furtherance of the blood research in which he and his associates are engaged.

The Hemo-Cardiac Foundation, Inc. is a nonprofit North Carolina corporation which was organized to encourage and promote research into and study of the causes of cancer and circulatory diseases. Its prime interest is leukemia and coronary diseases.

* * *

A research grant of $20,000 was awarded by the National Institute of Mental Health to Dr. Hans H. Strupp to continue his research in the area of psychotherapy. The objective of the investigation is to study the influence of the person of the psychotherapist of the treatment process. The project which is now in its fifth year was started when Dr. Strupp was affiliated with the George Washington University School of Medicine and transferred to the University of North Carolina in 1957. Previous grant support totalled $72,178.

## North Carolina Surgical Association

The North Carolina Surgical Association held its fall meeting at The Cloister, Sea Island, Georgia, on November 14 and 15, 1958.

The program consisted of papers by Dr. R. W. Postlethwait on "Carcinoma of the Esophagus"; Dr. K. V. Tyner on "Esophageal Hiatus Hernia"; Dr. F. H. Taylor on "Achalasia of the Esophagus"; Dr. C. L. Pressley on "Diverticuli of the Esophagus"; Dr. E. J. Dunning on "Operative Cholangiography"; Dr. L. B. Mason on "Meckel's Diverticulum"; and brief discussions by Drs. Walton Kitchin, George W. Paschal, and Joe Van Hoy on "Little Things Learned in Practice."

Officers elected were Drs. John A. Brabson, Charlotte, president; Isaac E. Harris, Jr., Durham—president-elect; Theodore S. Raiford, Asheville—vice president; and Alfred Hamilton, Raleigh—secretary-treasurer.

## North Carolina Heart Association

Makers of New Year's resolution have been urged by the North Carolina Heart Association to put at the top of their lists: "Resolved, that in 1959, I will avoid needless worry by checking symptoms of heart disease with my doctor."

Emphasizing the importance of periodic health checkups and early diagnosis, John Manning, Chapel Hill lawyer and president of the state Heart Association, pointed out that in the last ten years, heart research has given the physician much new knowledge for the benefit of patients.

Foreseeing even more dramatic victories in the decade ahead, Mr. Manning also urged adoption of an additional resolution:

"Resolved, that I will generously support the 1959 Heart Fund."

## Southern Regional Education Board

Prints of a new 15-minute color film on the Southern Regional Education Board have been supplied to film libraries in 16 Southern states, according to an announcement by Dr. Robert C. Anderson, SREB director.

Narrated by U.S. Senator Lister Hill of Alabama, the film tells the story of SREB's student contract program and also covers the major activities and programs carried out by the SREB since the Southern Regional Education Compact was signed in 1949.

Release of the 16 mm. sound and color film is one of several activities planned by the SREB during the coming year to commemorate the Board's tenth anniversary. Copies of the film may also be obtained from SREB's Public Information Office, 130 Sixth Street, N.W., Atlanta 13, Georgia.

*Compliments of*

**Wachtel's, Inc.**

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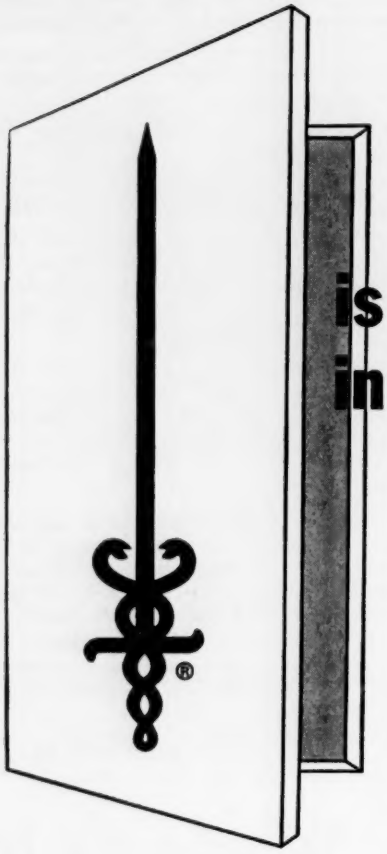
**ASHEVILLE, North Carolina**

**P. O. Box 1716 Telephone 3-7616—3-7617**



# is there a doctor in the house?

There certainly is in our house.

Where there is activity against cancer, there is the physician. It is no secret to any of you that the doctor contributes long hours to the needy cancer patient in clinics, in hospitals, in homes. It is your office of which we boast when we say "every doctor's office a cancer detection center."

Less well known is the fact that hundreds of your colleagues, as directors of the American Cancer Society nationally, in Divisions, and with Units, bring the best medical thought to our attack on cancer by education, by research, and by service to patients. The entire professional education program is planned for doctors by doctors.

The occasion for this brief salute is April, the Cancer Control Month. This year, 1955, marks the tenth anniversary of the reorganization of the American Cancer Society and the launching of the post-war attack on cancer. Much has been achieved—far more remains to be done.

We are grateful for your help in the past—and we rely on your continued support. We count heavily on the doctor in our house.

*American Cancer Society*

Leaders in government and education from throughout the South gathered in Atlanta last month for the formal dedication of the new Southern Regional Education Board office building.

SREB Chairman, Governor Cecil H. Underwood of West Virginia, presided over ceremonies at the modern $250,000 two-story structure which will serve as permanent home for the nation's pioneer agency in the field of regional education. Governor Marvin Griffin of Georgia and Dr. Robert C. Anderson, SREB director, also took part in the ceremonies.

---

## American Medical Writers' Association

Officers of the American Medical Writers' Association elected at the annual meeting of the association held in Chicago last September are as follows: president-elect—Dr. Austin Smith, Chicago; first vice president—Dr. Karl A. Menninger, Topeka, Kansas; second vice president—Dr. Theodore R. Van Dellen, Chicago. Re-elected were Dr. Raymond V. Pogge, Cincinnati, editor; and Dr. Harold Swanberg of Quincy, Illinois, secretary-treasurer.

Dr. Morris Fishbein of Chicago, formerly editor of the Journal of the American Medical Association, is the 1959 president.

## Mississippi Valley Medical Society

The attention of physician-medical writers is called to the Mississippi Valley Medical Society Annual Essay Contest. Any subject of general medical or surgical interest including medical economics and education may be submitted providing the paper is unpublished and is of interest and applicable value to general practitioners of medicine.

Contributions are accepted only from physicians who are members of the A.M.A. and who are residents and citizens of the United States. Manuscripts must not exceed 5000 words and must be submitted in five copies, in manuscript style. The winning essayist receives a cash prize of $100.00, a gold medal, and a certificate, also an invitation to address the annual meeting of the Mississippi Valley Medical Society. (Held at time and place of the American Medical Writers' Association; 1959 meeting, St. Louis, September 30, October 1, 2.) The Society may also award certificates of merit to physicians whose essays rate second and third best. Essays must be in the office of the M.V.M.S. Secretary not later than May 1, 1959. Winning essays are published each year in the **January Mississippi Valley Medical Journal.** Further details may be secured from Harold Swanberg, M.D., Secretary MVMS, 209-224 W.C.U. Building, Quincy, Illinois.

(BULLETIN BOARD CONTINUED ON PAGE 48)


# TUCKER HOSPITAL, INC.

212 West Franklin Street

Richmond, Virginia

A private hospital for diagnosis and treatment of psychiatric and neurological patients.
Hospital and out-patient services.

(Organic diseases of the nervous system, psychoneuroses, psychosomatic disorders, mood disturbances, social adjustment problems, involutional reactions and selective psychotic and alcoholic problems.)

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DR. GEORGE S. FULTZ, JR. DR. AMELIA G. WOOD

DR. ROBERT K. WILLIAMS

# BULLETIN BOARD

(BULLETIN BOARD CONTINUED FROM PAGE 47)

## Blue Shield Medical Care Plans

More than 250 Blue Shield Plan physician-trustees and executives, as well as state and local medical society officers and secretaries, are expected to attend the 1959 Blue Shield Professional Relations Conference to be held February 9-11 at the Drake Hotel, in Chicago.

This Conference, which brings together representatives of the medical profession and Blue Shield for the purpose of discussing matters of mutual interest, has been held annually since 1951 under the sponsorship of Blue Shield Medical Care Plans, the National Association of Blue Shield Plans.

The 1959 program features as speakers many nationally known medical leaders, including Dr. Louis M. Orr, Orlando, Florida, president-elect of the American Medical Association; Dr. Leland McKittrick, Brookline, Massachusetts, chairman of the A.M.A.'s Council on Medical Education and Hospitals, and Dr. Donald Stubbs, Washington, D. C., chairman of the Board of Blue Shield Medical Care Plans. Dr. Orr will discuss "The Social, Economic and Political Factors Affecting Medical Care Today"; Dr. McKittrick will talk on "The Criticisms of Blue Shield—What They Signify and How to Answer Them"; and Dr. Stubbs' subject is "Blue Shield's Responsibility to Medicine."

For the first time, individual invitations have been extended to presidents of all state medical societies to attend the Conference. Their presence is felt to be particularly important this year in view of expected efforts by local medical groups in the year ahead to implement the recent action of the A.M.A. calling for the development of special forms of medical care coverage for senior citizens through voluntary programs such as Blue Shield.

An open invitation is also extended to physicians throughout the country who may be interested in in attending the Conference.

## U. S. Department of Health, Education, and Welfare

Competitive examinations for appointment to the Commissioned Corps of the United States Public Health Service will be held throughout the Nation in March and April, according to an announcement by Surgeon General Leroy E. Burney. .The examinations will cover six professional health, medical and scientific categories.

Regular Corps examinations for physicians, dentists, sanitary engineers, clinical psychologists, and biochemists will be held April 21, 22, 23, and 24. Applications must be filed with the Surgeon General no later than March 6.

Application forms and further information may be obtained by writing to the Surgeon General, U. S. Public Health Service (P), Washington 25, D. C.

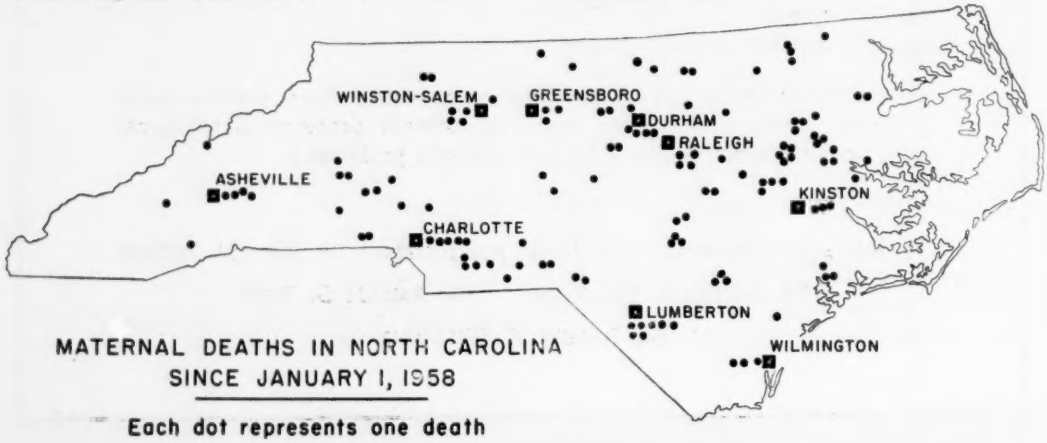
* * *

Dr. Richard A. Prindle has been named Chief of the Air Pollution Medical Program of the Public Health Service, Surgeon General Leroy E. Burney announced today. He succeeds Dr. Wilton M. Fisher, who will become Chief of the Training Branch of the Public Health Service's Division of Personnel.

# Classified Advertisements

**FULLY EQUIPPED and well appointed office available progressive in Eastern North Carolina city. Arrangements for either rent or purchase. Reasonable. Ideal for man who would want to get some private practice without capital outlay. Leaving for further training. Reply Box 790, Raleigh, N. C.**

**WANTED: Young male psychiatrist, Diplomate or Board eligible; to direct privately operated outpatient clinic. Salary $16,000-18,000, plus commission factor. Write: J Adv. SA., P.O. Box 790, Raleigh, N. C.**



In smooth muscle spasm...

• controls *stress*

• relieves *distress*

# Pro-Banthine® with Dartal®

**Pro-Banthine—**
*unexcelled for relief of cholinergic spasm—*
has been combined with
**Dartal—**
*new, well-tolerated agent for stabilizing emotions—*
to provide you with
**Pro-Banthine with Dartal—**
for more specific control of functional gastrointestinal disorders, especially those aggravated by emotional tension.

**Specific Clinical Applications:** Functional gastrointestinal disturbances, pylorospasm, peptic ulcer, gastritis, spastic colon (irritable bowel), biliary dyskinesia.

**Dosage:** One tablet three times a day.

**Availability:** Aqua-colored tablets containing 15 mg. of Pro-Banthine (brand of propantheline bromide) and 5 mg. of Dartal (brand of thiopropazate dihydrochloride). G. D. Searle & Co., Chicago 80, Illinois. Research in the Service of Medicine.

SEARLE

# running noses and open stuffed noses orally

## with TRIAMINIC, the oral nasal decongestant

- in nasal and paranasal congestion
- in sinusitis
- in postnasal drip
- in allergic reactions of the upper respiratory tract

## safer and more effective than topical medication

- reaches *all* respiratory membranes systemically
- avoids "nose drop addiction"
- presents no problem of rebound congestion
- provides longer-lasting relief

Relief with Triaminic is prompt and prolonged because of this special timed-release action . . . beneficial effect starts in minutes, lasts for hours.

first—the outer layer dissolves within minutes to produce 3 to 4 hours of relief
then—the inner core disintegrates to give 3 to 4 more hours of relief

***Each* TRIAMINIC *Tablet provides:***

| | |
|---|---|
| Phenylpropanolamine HCl . . . | 50 mg. |
| Pheniramine maleate . . . . . | 25 mg. |
| Pyrilamine maleate . . . . . | 25 mg. |

One-half of this formula is in the outer layer, the other half is in the core.

***Dosage:*** One tablet in the morning, mid-afternoon and in the evening, if needed.

# Triaminic®

***Also available:*** For the occasional patient who requires only half dosage: timed-release TRIAMINIC JUVELETS. Each Juvelet is equivalent to ½ of a Triaminic Tablet.

For those patients who prefer liquid medication: TRIAMINIC SYRUP. Each 5 ml. tsp. of this palatable syrup is equivalent to ¼ of a Triaminic Tablet.

**SMITH-DORSEY • a division of The Wander Company • Lincoln, Nebraska • Peterborough, Canada**

# Major Hospital Policy

**Pays up to $10,000.00 for each member of your family, subject to deductible you choose**

**Deductible Plans available:**

**$100.00**
**$300.00**
**$500.00**

# Business Expense Policy

**Covers your office overhead while you are disabled, up to $1,000.00 per month**

**approved by**

**The Medical Society of North Carolina for Its Members**

**Write or Call for information**

## Ralph J. Golden Insurance Agency

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**GREENSBORO, N. C.**
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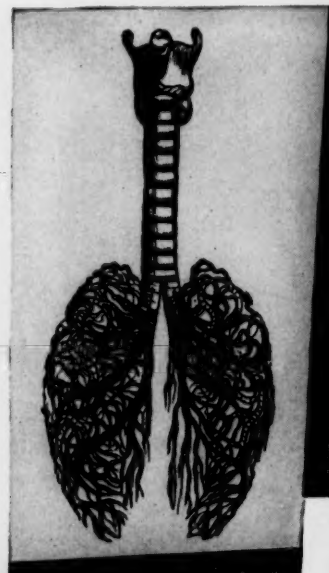

an added measure of protection in your treatment of upper respiratory disorders

# SULTUSSIN®

**TABLETS (new!) and LIQUID**

SULTUSSIN triple sulfonamides add their antibacterial power to your choice of antibiotic to

- help prevent and clear up secondary infections faster and more effectively
- avert the dangers of rheumatic fever, nephritis, otitis media and other complications

SULTUSSIN simultaneously affords maximum relief from sneezing, stuffed or runny nose, cough, wheezing, malaise, slight fever, and other distressing symptoms of the severe common cold, coughs, influenza, etc.

antibacterial chemoprophylaxis • expectorant
antiallergic • bronchodilator • antispasmodic

In new raspberry flavored tablets and pleasant tasting liquid form

| | Each tablet provides | Each teaspoonful (5 cc.) provides |
|---|---|---|
| Sulfadiazine | 0.083 Gm. | 0.166 Gm. |
| Sulfamerazine | 0.083 Gm. | 0.166 Gm. |
| Sulfamethazine | 0.083 Gm. | 0.166 Gm. |
| Pyrilamine Maleate | 3.125 mg. | 6.25 mg. |
| Phenyltoloxamine Dihydrogen Citrate | 3.125 mg. | 6.25 mg. |
| Glyceryl Guaiacolate | 25.0 mg. | 50.0 mg. |
| Ephedrine Sulfate | 2.5 mg. | 5.0 mg. |

Supplied
Liquid in 4 ounce and pint bottles
Tablets, bottles of 50 and 100

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PAGE 825

THE TILDEN COMPANY • NEW LEBANON, N. Y.
Oldest Manufacturing Pharmaceutical House in America • Founded 1824

*Proven*

in over three years of clinical use
in over 600 clinical studies

*Specific*

FOR RELIEF OF ANXIETY
AND MUSCLE TENSION

*Selective*

Does not interfere with autonomic function
Does not impair mental efficiency,
motor control, or normal behavior
Has not produced hypotension,
agranulocytosis or jaundice

MEPROBAMATE (WALLACE)

**Miltown®**

Supplied: 400 mg. scored tablets, 200 mg. sugar-coated tablets.

WALLACE LABORATORIES, New Brunswick, N. J.

CW-9949

# Now—All cold symptoms can be controlled

Provides Triaminic for more complete and more effective relief from nasal and paranasal congestion because of systemic transport to *all* respiratory membranes—without drawbacks of topical therapy.†

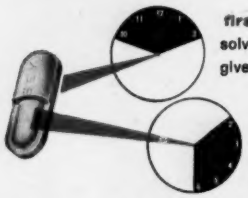
Provides well-tolerated APAP (N-acetyl-p-aminophenol) for prompt and effective analgesic and antipyretic action to make the patient more comfortable.

Provides Dormethan (brand of dextromethorphan HBr) for non-narcotic antitussive action on the cough reflex center in the medulla—as effective as codeine but without codeine's drawbacks.

Provides terpin hydrate, classic expectorant to thin inspissated mucus and help the patient clear the respiratory passages.

†Lhotka, F. M.: Illinois M. J. 112:259 (Dec.) 1957. Fabricant, N. D.: E. E. N. T. Monthly 37:460 (July) 1958. Farmer, D. F.: Clin. Med. 5:1183 (Sept.) 1958.

**Special "timed release" design**



first—the outer layer dissolves within minutes to give 3 to 4 hours of relief

then—the inner core releases its ingredients to sustain relief for 3 to 4 more hours

also available for those patients who prefer liquid medication: **Tussagesic suspension**

**Each TUSSAGESIC tablet provides:**

| | |
|---|---|
| TRIAMINIC® | 50 mg. |
| (phenylpropanolamine HCl | 25 mg. |
| pheniramine maleate | 12.5 mg. |
| pyrilamine maleate | 12.5 mg.) |
| Dormethan (brand of dextromethorphan HBr) | 30 mg. |
| Terpin hydrate | 180 mg. |
| APAP (N-acetyl-p-aminophenol) | 325 mg. |

***Dosage:*** One tablet in the morning, midafternoon and in the evening, if needed.

# Tussagesic® *timed-release tablets*

**Contains* **TRIAMINIC** *to* STOP *running noses* *and open stuffed noses orally*

**SMITH-DORSEY** • a division of The Wander Company • Lincoln, Nebraska • Peterborough, Canada

FOR THE SLOW-TO-GROW CHILD B-VITAMIN SUPPORT...PLUS THE PROTEIN-POTENTIATING ACTION OF L-LYSINE..PLUS THE EXCEPTIONALLY WELL-TOLERATED HEMATINIC PERFORMANCE OF FERRIC PYRO-PHOSPHATE...AND THE IRON AND $B_{12}$ ENHANCING ACTION OF SORBITOL IN DELICIOUS CHERRY FLAVORED

INCREMIN® WITH IRON SYRUP

Lysine–Vitamins

BUILDS IRON RESERVES

BOOSTS APPETITE

PROMOTES GROWTH

| Each daily teaspoonful dose (5 cc.) contains: | |
|---|---|
| l-Lysine HCl | 300 mg. |
| Vitamin $B_{12}$ Crystalline | 25 mcgm. |
| Thiamine HCl ($B_1$) | 10 mg. |
| Pyridoxine HCl ($B_6$) | 5 mg. |
| Ferric Pyrophosphate (Soluble) | 250 mg. |
| Iron (as Ferric Pyrophosphate) | 30 mg. |
| Sorbitol | 3.5 Gm. |
| Alcohol | 0.75% |

Bottles of 4 and 16 fl. oz.

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**IN OFFICE SURGERY**

**ELECTIVE AND TRAUMATIC**

*use* XYLOCAINE *first...*
*as a local anesthetic*
*or a topical anesthetic*

**SWAB** **SPRAY** **INFILTRATION** **NERVE BLOCK**

Xylocaine HCl solution, the versatile anesthetic for general office surgery, relieves pain promptly and effectively with adequate duration of anesthesia. It is safe and predictable. Local tissue reactions and systemic side effects are rare. Supplied in 20 cc. and 50 cc. vials; 0.5%, 1% and 2% without epinephrine and with epinephrine 1:100,000; also in 2 cc. ampules; 2% without epinephrine and with epinephrine 1:100,000.

**XYLOCAINE® HCl SOLUTION**

(brand of lidocaine*)

Astra Pharmaceutical Products, Inc., Worcester 6, Mass., U.S.A.

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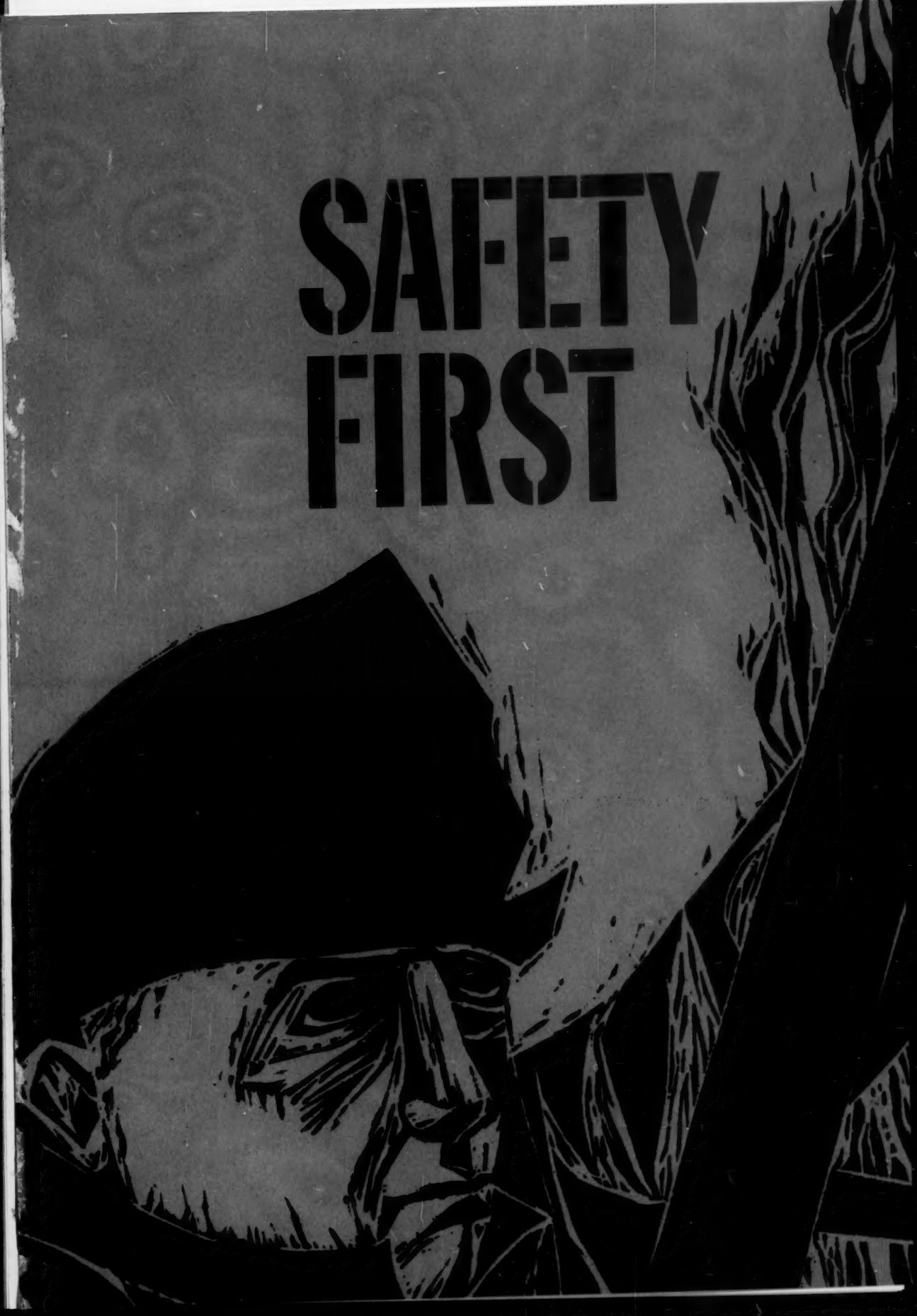

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## AFTER SIX YEARS, A SAFETY RECORD UNMATCHED IN SYSTEMIC ANTIBIOTIC THERAPY—PLUS REMARKABLE EFFECTIVENESS AGAINST THE COCCI

Actually, after all this time, there has not been a single, serious reaction to ERYTHROCIN. Also, the problem of resistance has remained unusually low.

You'll find ERYTHROCIN highly effective against most coccal organisms. And it may well be the tool to counteract coccal complications following viral attacks.

Usual adult dose is 250 mg. four times daily. Dosage for children may be reduced in proportion to body weight. ERYTHROCIN comes in Filmtabs® (100 and 250 mg.), bottles of 25 and 100. Also available in tasty, cinnamon-flavored oral suspension; comes in 75-cc. bottles.

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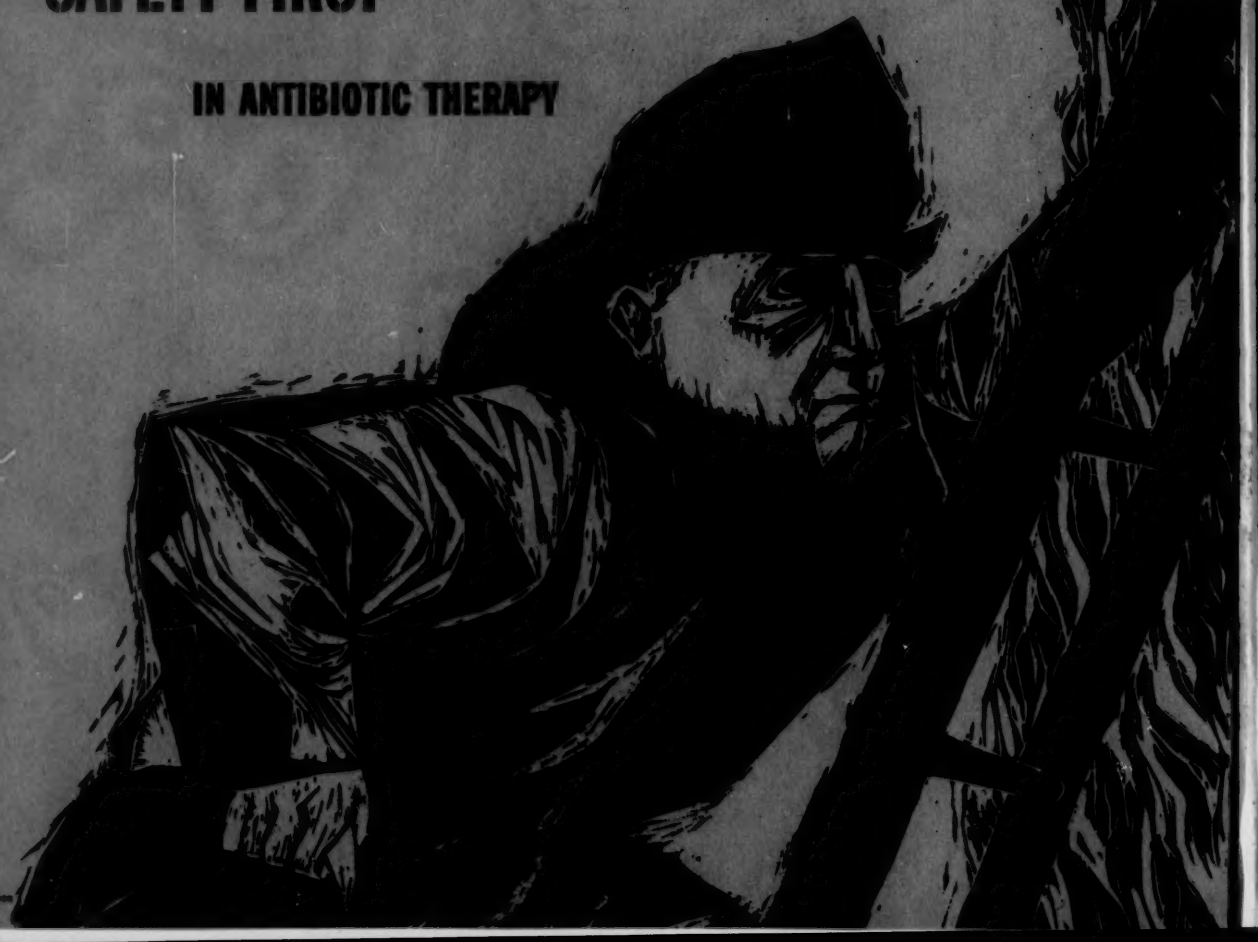
# SAFETY FIRST

## IN ANTIBIOTIC THERAPY



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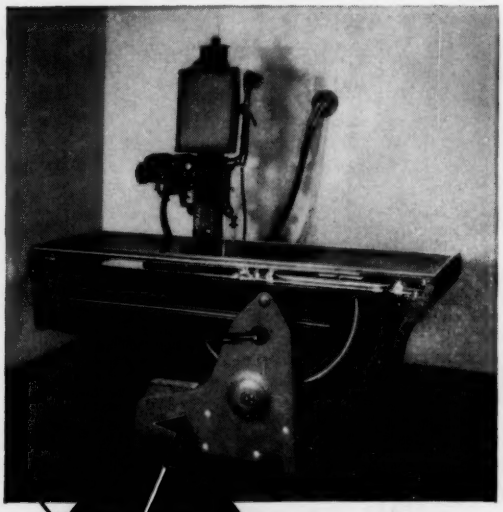

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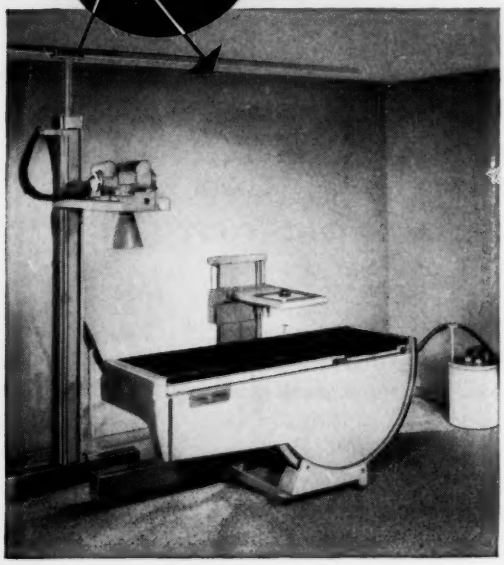
From This to This

## without capital outlay



## the difference is Maxiservice® rental

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*in peptic ulcer*

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**POTENT ANTICHOLINERGIC ACTION**

curbs secretion when excessive
normalizes motility when overactive

*Activity appears to be restricted to the desired site of action.*
*Predictable therapeutic response in refractory cases.*

Potency and Prolonged Duration of Action
10 mg. b.i.d. Average Dose · Supplied as:
10 mg. white, scored tablets

References: 1. Finkelstein, Murray: Journal of Pharmacology and Experimental Therapeutics, in press. 2. Winkelstein, Asher: Paper in preparation.
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# NICOZOL w/Reserpine

**for the aged patient**

. . . when mental decline
is complicated by
marked agitation

**NICOZOL w/Reserpine**

*helps reverse cerebral deterioration . . . while it stimulates body function . . . and calms the emotions.*

**for a 3-way synergistic action . . .**

**Each tablet NICOZOL w/Reserpine contains:**

| | | |
|---|---|---|
| Pentylenetetrazol | 100 mg. | (cerebral stimulant & analeptic) |
| Niacin | 50 mg. | (vasodilator) |
| Reserpine | 0.25 mg. | (tranquilizer-sedative) |

## Clinically Established[1,2]

In studies of 75 patients (average age—72), with typical mental and emotional symptoms together with alternate periods of depression and agitation, 87% showed gratifying response to NICOZOL w/RESERPINE.

"This therapy afforded relief of agitation . . . improved memory, behavior, sociability, appearance and tidiness. Symptoms of confusion, aggressiveness, hostility and disorientation also were relieved." **Fewer side effects were noted.**

## AT HOME . . . NOT IN A HOME

". . . patients who otherwise would have required institutionalized care were managed at home . . . ."[2]

**Prescribed early, NICOZOL w/RESERPINE may avoid** "later commitment to nursing homes or state hospitals."[1,2]

*Write for professional samples and literature*

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WINSTON-SALEM N. C.


1. Proctor, R. C.: Clin. Med. 6: 717 (June) 1957
2. Proctor, H. ., Bailey, W. H. and Morehouse, W. G.: J. Am. Geriatrics Soc. (April) 1958.

LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY,
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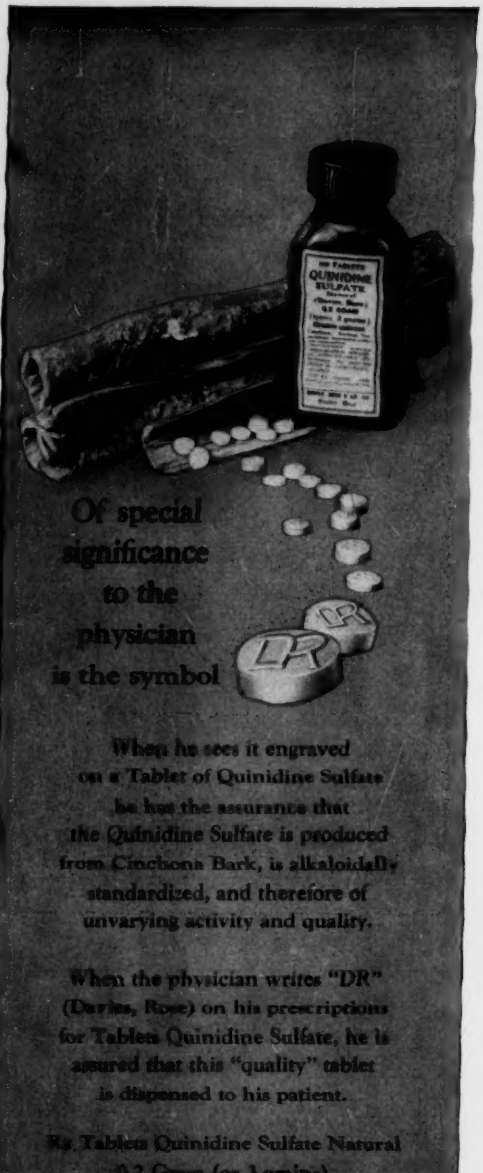

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Available on prescription only.

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| each coated tablet contains: | **Phenaphen** |
|---|---|
| Phenacetin (3 gr.) | 194.0 mg. |
| Acetylsalicylic Acid (2½ gr.) | 162.0 mg. |
| Phenobarbital (¼ gr.) | 16.2 mg. |
| Hyoscyamine Sulfate | 0.031 mg. |
| **plus** | |
| Prophenpyridamine Maleate | 12.5 mg. |
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(brand of lidocaine*)

*as a local or topical anesthetic*

Xylocaine is routinely fast, profound and well tolerated. Its extended duration insures greater postoperative comfort for the patient. Its potency and diffusibility render reinjection virtually unnecessary. It may be infiltrated through cut surfaces permitting pain-free exploration and longer suturing time.

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SEE PDR

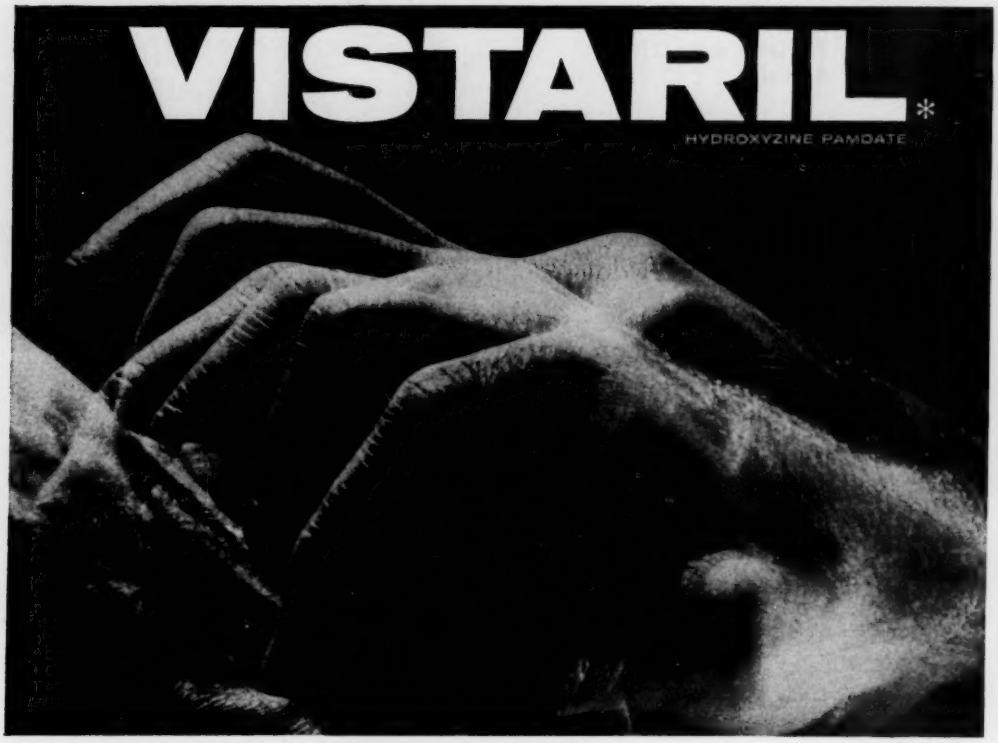
† warts; moles; sebaceous cysts; benign tumors; wounds; lacerations; biopsies; tying superficial varicose veins; minor rectal surgery; simple fractures; compound digital injuries (not involving tendons, nerves or bones)

*U.S. PAT. NO. 2,441,498 MADE IN U.S.A.

# IN URTICARIA AND PRURITUS

# VISTARIL*

HYDROXYZINE PAMOATE



## A PSYCHOTHERAPEUTIC ANTIHISTAMINE

**(as designated by A.M.A. Council on Drugs, 1958)**

**SPECIFIC ANTIHISTAMINIC ACTION** in the treatment of a variety of skin disorders commonly seen in your practice.

"While some of the tranquilizers are only partially effective as far as antiallergic activities are concerned . . . [hydroxyzine] has been found, by comparison, to be the most potent thus far . . ."[1]

"The most striking results were seen in those patients with chronic urticaria of undetermined etiology."[2]

**PLUS**

**PSYCHOTHERAPEUTIC POTENCY** for the relief of anxiety and tension.

The psychotherapeutic effectiveness of hydroxyzine (VISTARIL) was confirmed in a series of 479 patients suffering from a wide variety of dermatoses, including atopic dermatitis, neurodermatitis, psoriasis, lichen planus, nummular eczema, dyshidrosis, pruritus ani and vulvae, and rosacea. "Adverse reactions were minimal."[3]

**RECOMMENDED ORAL DOSAGE:** *50 mg. q.i.d. initially; adjust according to individual response.*

VISTARIL Capsules: *25 mg., 50 mg., 100 mg.*

VISTARIL Parenteral Solution: *10 cc. vials and 2 cc. Steraject® Cartridges. Each cc. contains 25 mg. hydroxyzine (as the HCl).*

More than a tranquilizer

REFERENCES:

1. Eisenberg, B. C.: Clinical Medicine *5*:897-904 (July) 1958.
2. Feinberg, A. R., et al.: J. Allergy *29*:358 (July) 1958.
3. Robinson, H. M., et al.: So. Med. J. *50*:1282 (Oct.) 1957.

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*introduces*

# Tancopal®

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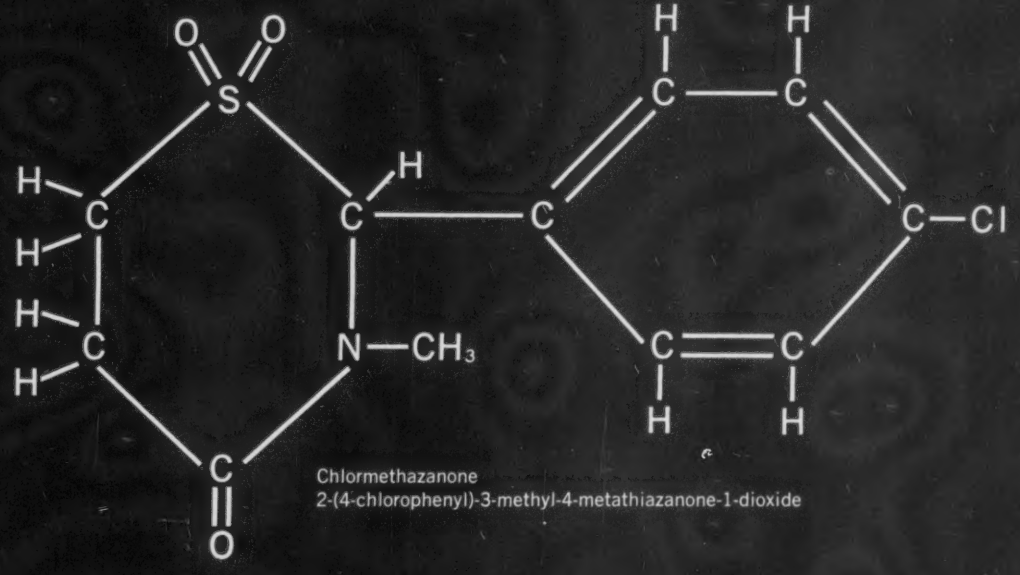
*a completely new major chemical contribution to therapeutics*




Chlormethazanone
2-(4-chlorophenyl)-3-methyl-4-metathiazanone-1-dioxide

*unrelated chemically to any other drug in current use*

*designed to be equally effective as both*

*a MUSCLE RELAXANT*

*a TRANQUILIZER*

# *Trancopal*

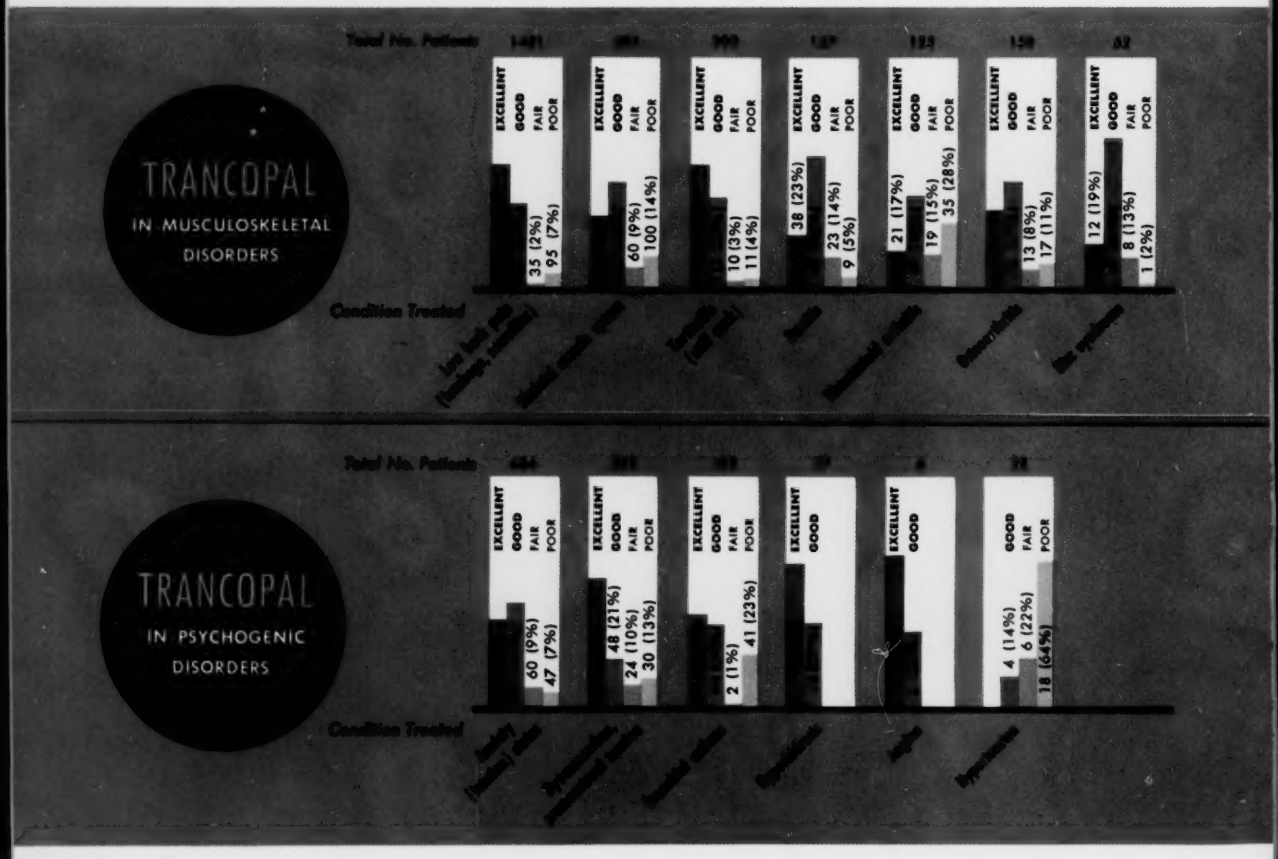
*the first true "TRANQUILAXANT"**

***offering new freedom for your patients... from muscle spasm, from tension and anxiety, from side effects***

* **tran-qui-lax-ant** (tran'kwi-lak'sant) [ < L. tranquillus, quiet; L. laxare, to loosen, as the muscles]

**EXCEEDS OLDER DRUGS UP TO 4 TIMES IN PERCENTAGE OF CLINICAL EFFICACY** (Lichtman)

The results of clinical studies of over 4000 patients by 105 physicians demonstrate that TRANCOPAL often is effective when other drugs have failed. From these studies it is clear that TRANCOPAL probably can provide more help for a greater number of tense, spastic, and/or emotionally upset patients than any other chemotherapeutic agent in current use.



## TRANCOPAL... the first true "tranquilaxant"

Both a muscle relaxant and a calmative agent.

---

In musculoskeletal disorders, 91 per cent effective.

---

In anxiety and tension states, 93 per cent effective.

---

Lower incidence of side effects than with zoxazolamine, methocarbamol or meprobamate.

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No known contraindications. Blood pressure, pulse rate, respiration and digestive processes unaffected by therapeutic dosage. No effects on hematopoietic system or liver and kidney function.

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Low toxicity. In animals, even less toxic than aspirin.

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No gastric irritation. Can be taken before meals.

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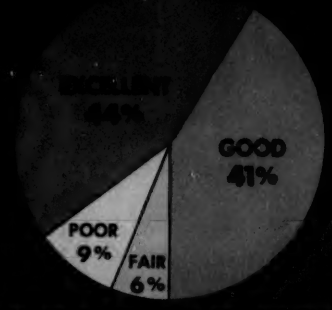
No clouding of consciousness, no euphoria or depression.

---

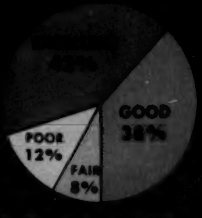
No perceptible soporific effect, even in high dosage.

## CLINICAL RESULTS IN 4092 PATIENTS**




MUSCULOSKELETAL CONDITIONS
2929 Patients

+




PSYCHOGENIC CONDITIONS
1163 Patients

=

TOTAL 4092 Patients

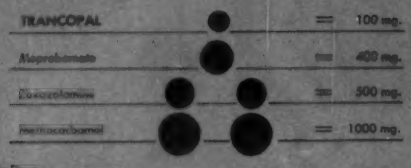
MAJOR IMPROVEMENT
84%

**Cooperative Study, Department of Medical Research, Winthrop Laboratories.

## Compare Trancopal with 3 widely used central relaxants

### FOR ACTIVITY

Single Dose



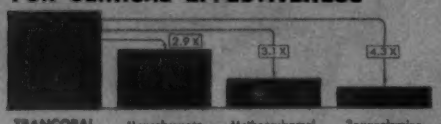

Daily Dose
Same as above, t.i.d.

Considering the usual human dose, Trancopal, the first true "tranquilaxant," is four to ten times as potent per milligram.

### FOR SAFETY

Comparative pharmacologic tests showed that Trancopal is up to thirteen times as safe, or up to thirteen times less toxic. The measure of safety was the $LD_{50}$ in mice/usual human dose.

### FOR CLINICAL EFFECTIVENESS




A clinical comparison in low back pain, torticollis, bursitis and anxiety states showed that Trancopal is up to four times as effective. Each of 40 patients received all four drugs in random rotation for several days. While each of the four drugs gave some relief, only the one providing the most effective relief was recorded.

**INDICATIONS**

**Musculoskeletal**
- Low back pain (lumbago)
- Neck pain (torticollis)
- Bursitis
- Rheumatoid arthritis
- Osteoarthritis
- Disc syndrome
- Fibrositis
- Joint disorders (ankle sprain, tennis elbow, etc.)
- Myositis
- Postoperative myalgias

**Psychogenic**
- Anxiety and tension states
- Dysmenorrhea
- Premenstrual tension
- Asthma
- Emphysema
- Angina

**Neurologic**
- Muscle spasm in paralysis agitans, multiple sclerosis, hemiplegia, poliomyelitis

# TRANCOPAL thoroughly evaluated clinically

"In the treatment of conditions associated with skeletal muscle spasm there was a high percentage of satisfactory results (excellent, good or fair) in 310 patients (94%) out of 331 treated. . . . In 120 patients with simple anxiety or tension states results were satisfactory in 114 (95%). Dosage of chlormethazanone in all cases was 100 mg. t.i.d. As well as relieving the anxiety or tension state, chlormethazanone also allowed these patients to resume their usual occupations."
(Lichtman)

"The effect of this preparation in these cases [skeletal muscle spasm] was excellent and prompt . . ."

Trancopal ". . . was effective in relieving the symptoms of anxiety . . . [with a] profile of pharmacologic actions similar to meprobamate . . ."
(Mullin and Epifano)

"We have just started using it [Trancopal] for relaxing spastic musculature and are very much encouraged."
(Baker)

# Trancopal

*the first true "TRANQUILAXANT"*

**Dosage:** One Caplet (100 mg.) orally three or four times daily. Relief of symptoms occurs in fifteen to thirty minutes and lasts from four to six hours.

**Supplied:** Trancopal Caplets® (scored) 100 mg., bottles of 100.

Winthrop Laboratories • New York 18, N. Y.


• Baker, A. B.: Modern Med. 26:140, April 15, 1958. • Cohen, A. I.: In preparation. • Cooperative Study, Department of Medical Research, Winthrop Laboratories. • Gesler, R. M., and Coulston, F.: Toxicol. & Appl. Pharmacol. To be published. • Gesler, R. M., and Surrey, A. R.: J. Pharmacol. & Exper. Therap. 122:24A, Jan., 1958. • Gesler, R. M., and Surrey, A. R.: J. Pharmacol. & Exper. Therap. 122:517, April, 1958. • Lichtman, A. L.: Kentucky Acad. Gen. Pract. J. 4:28, Oct., 1958. • Mullin, W. G., and Epifano, Leonard: To be published. • Surrey, A. R.; Webb, W. G., and Gesler, R. M.: J. Am. Chem. Soc. 80:3469, July 5, 1958.



Printed in U. S. A. 11-58 (3928A)

A workhorse "mycin" for common infections

# respiratory infections

**prompt, high blood levels**

**consistently reliable and reproducible blood levels**

**minimal adverse reactions**

With well-tolerated CYCLAMYCIN, you will find it possible to control many common infections rapidly and to do so with remarkable freedom from untoward reactions. CYCLAMYCIN is indicated in numerous bacterial invasions of the respiratory system—lobar pneumonia, bronchopneumonia, tracheitis, bronchitis, and other acute infections. It has been proved effective against a wide range of organisms, such as pneumococci, H. influenzae, streptococci, and many strains of staphylococci, including some resistant to other "mycins." Supplied as Capsules, 125 and 250 mg., vials of 36; Oral Suspension, 125 mg. per 5-cc. teaspoonful, bottles of 2 fl. oz.

new

## CYCLAMYCIN®

Triacetyloleandomycin, Wyeth

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# SPONTIN IN SERIOUS

*A Special Report from Abbott*
*to the Medical Profession*
*on a Year's Clinical Experience*
*with SPONTIN®*
*(Ristocetin, Abbott)*

In a Spanish province, a patient lay dying of endocarditis. A short wave radio appeal for SPONTIN was intercepted by a Baltimore physician. The antibiotic was immediately flown to this faraway land, and 10 days later—the patient had recovered.

In Chicago, a moribund patient had been administered 18 combinations of 10 different antibiotics without success. Involved was a hospital-acquired staphylococcal pneumonia—plus complications. SPONTIN was substituted and the patient lived.

A five-week-old infant was critically ill with staphylococcal enteritis. Treatment failures included erythromycin and chloramphenicol. Three days of SPONTIN saved this life. The list is long and impressive and it grows daily.

Recently, a study[1] was made of serious and resistant staphylococcal infections reported to Abbott Laboratories. Many of these cases had serious complicating diseases—many were moribund, or almost so, at the time SPONTIN was started. Yet, out of the 160 staphylococcal cases studied, 93 were reported cured and 38 improved after the administration of SPONTIN.

Out of the total of 251 patients with severe infections caused by gram-positive or mixed organisms, 149 were reported cured and 53 others improved. And the record for pediatric practice was every bit as good.

Additionally, SPONTIN continues to exhibit exceptional bactericidal activity against coccal infections[2]. And, according to another study, SPONTIN provides successful short-term therapy in endocarditis[3].

Only last October, at the Antibiotics Symposium in Washington, D. C., a panel of six leading antibiotic experts placed SPONTIN at the top of all other commercially-available antibiotics for treating serious staphylococcal infections. Also, six papers—all dealing with the effectiveness of ristocetin (SPONTIN®) in treating staphylococcal infections—were presented at the Symposium.

One of the most encouraging aspects of the year's literature on SPONTIN is the increasing testimony to its safety. As the months have passed and cases have accumulated by the hundreds, it has become apparent that careful attention to dosage recommendations has practically eliminated toxicity and side effects as serious obstacles to therapy. Also, recent improvements have been made in the manufacture of SPONTIN; the drug is now made from pure crystals.

A recent report[4] in the Journal of the American Medical Association concluded, "It is our opinion that, if proper precautions are observed, ristocetin is a [well tolerated] and potent agent to employ in the treatment of staphylococcal infections." And in another study, after successfully treating 28 patients with a variety of staphylococcal infections, the authors reported[5], "No serious complications were noted."

Few more dramatic records have been written in such a short space of time. SPONTIN has proved itself to be a good answer, perhaps the best answer at present, to the resistant staphylococcal problem—and of real value in other serious coccal infections. It may well be your answer when you're confronted with a serious infection.

Abbott

901666

# STAPHYLOCOCCAL INFECTIONS

*Excerpts from*

*Reports Read at the*

*Antibiotics Symposium*

**Spontin In Treating Severe Respiratory Infections**—"In 13 of 20 patients the results were excellent, with clinical response being evident within one to four days after institution of therapy. In three additional patients, there was some degree of improvement in pneumonic processes superimposed on tuberculosis in two cases and on pulmonary neoplasm in one. In all other cases, serious antecedent pathology undoubtedly influenced the negative or equivocal response to ristocetin therapy.[6]"

**Spontin In Treating Staphylococcal Infections**—After successfully treating 28 patients, the authors wrote, "Ristocetin or Spontin has proved to be bactericidal and bacteriostatic, particularly for the *Staphylococcus aureus,* which is often resistant to many other antibiotics.[5]"

**Spontin In Treating Seven Difficult Cases**—"Ristocetin has produced excellent results in eradicating, mitigating or preventing infection in seven selected difficult cases. Six of the seven cases involved *Staphylococcus aureus* which did not respond to chemotherapy with other antibiotics.[7]"

**Spontin Blood Levels In Children**—"Ristocetin was administered as a single intravenous injection of 12.5 milligrams per kilogram. This resulted in serum levels ranging from 1.3 to 10.6 mcg. after two hours with a gradual fall to a level of 0.7 mcg. per cubic centimeter or less after 12 hours.[8]"

**Spontin In Treating Staphylococcal Pneumonia**—"Ristocetin was used in the treatment of 24 patients with staphylococcal pneumonia, 17 of whom had failed to respond to previously administered antibiotics. Complete clearing of pneumonitis was obtained in 16 patients and significant improvement occurred in two others. Two patients died of pneumonia; four others succumbed to other lethal diseases.[9]"

**Spontin In Treating Children and Adults**—"Ristocetin completely controlled severe staphylococcal infections in 11 adults and six children who received adequate therapy.[10]"


1. Totals represent published reports and personal communications to Abbott Laboratories.
2. Sixth Annual Symposium on Antibiotics, Washington, D. C., Oct. 15, 16, 17, 1958.
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# Low Dosage KYNEX* for G.U. Infections

Sulfamethoxypyridazine Lederle

**Unusual Antibacterial and Anti-Infective Properties**—More soluble in acid urine[1] . . . higher and better sustained plasma levels than any other known and useful antibacterial sulfonamide.[2]

**Unprecedented Low Dosage**—Less sulfa for the kidney to cope with . . . yet fully effective. A single daily dose of 0.5 to 1.0 Gm. maintains higher plasma levels than 4 to 6 Gm. daily of other sulfonamides—a notable asset in prolonged therapy.[2]

**Dosage:** The recommended adult dose is 1 Gm. (2 tablets) the first day, followed by 0.5 Gm. (1 tablet) every day thereafter, or 1 Gm. every other day for mild to moderate infections. In severe infections where prompt, high blood levels are indicated, the initial dose should be 2 Gm. followed by 0.5 Gm. every 24 hours.

## *KYNEX—WHEREVER SULFA THERAPY IS INDICATED*

**Tablets:** Each tablet contains 0.5 Gm. (7½ grains) of sulfamethoxypyridazine. Bottles of 24 and 100 tablets.

**Syrup:** Each teaspoonful (5 cc.) of caramel-flavored syrup contains 250 mg. of sulfamethoxypyridazine. Bottle of 4 fl. oz.

references:

1 Grieble, H.G., and Jackson, G.G.: Prolonged Treatment of Urinary-Tract Infections with Sulfamethoxypyridazine. *New England J. Med.* 258:1-7, 1958

2. Editorial: *New England J. Med.* 258:48-49, 1958.

**LEDERLE LABORATORIES,** a Division of AMERICAN CYANAMID COMPANY, Pearl River, New York

*Reg. U. S. Pat. Off.

# AN AMES CLINIQUICK™

CLINICAL BRIEFS FROM MODERN PRACTICE

*What differentiates "renal diabetes" (renal glycosuria) from diabetes mellitus?*

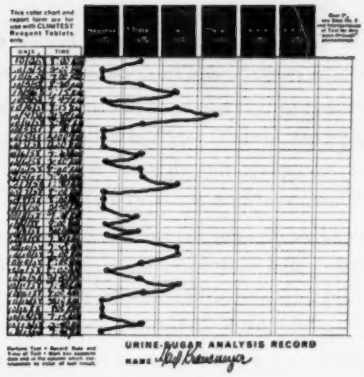
Blood sugar levels. In renal glycosuria they are normal; in untreated diabetes, fasting blood sugars are usually 130 mg.% or over and postprandial levels 170 mg.%, or more.

*Source:* Joslin, E. P.; Root, H. F.; White, P., and Marble, A.: The Treatment of Diabetes Mellitus, ed. 9, Philadelphia, Lea & Febiger, 1952, pp. 701-702.

**A "URINE-SUGAR PROFILE" FOR CLOSER CONTROL**

The new CLINITEST Urine-Sugar Analysis Set contains an improved Analysis Record form that enables even closer control of the *moderate* and the *severe* diabetic. Daily urine-sugar readings may be connected to produce a graph—a day-to-day "profile" that reveals at a glance individual trends and degree of control.

•GP *16*:121 (August) 1957.

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# CLINITEST® BRAND

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**FOR EVEN BETTER CONTROL OF THE MODERATE AND THE SEVERE DIABETIC**

the STANDARDIZED urine-sugar test for reliable quantitative estimations "...the most satisfactory method for home and office routine testing."•

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# Exactly how does new Halodrin* restore the "premenopausal prime" in postmenopausal women?

Webster defines "prime" as the period of greatest health, strength, and beauty. In a woman, these are the childbearing years between puberty and menopause—the years when her hormone production is highest.

The inevitable reduction in this hormone production as she enters the menopause often results in physical discomfort in the form of hot flushes, nervousness, insomnia, or a multiplicity of other symptoms with which you are familiar. Superimposed on this physical picture is the psychic trauma brought on by this unavoidable evidence of aging. The thing that brings her to a physician is simply that she "feels bad."

You can't make her 35 again—but the odds are good that you can make her feel like it! The secret is a combination of reassurance and hormones. The exact form and amount of the former defy objective analysis, but the latter can now be provided with scientific precision. Reduced to essentials, here is the explanation of exactly how hormones—in the form of Upjohn's new Halodrin—restore the "premenopausal prime."

The normal premenopausal woman excretes estrogens in the urine in the form of estradiol, estrone, and estriol, in an approximate 28-day average ratio of 39:15:46. Starting with this urinary excretion of estrogens, it is possible to calculate backwards and estimate the amount of estradiol that must have been secreted endogenously in order to produce these urinary levels. This is possible because the proportion of estrogens which appears in the urine following parenteral administration has been established in castrated women.

On this basis, the average endogenous output of estrogens is about 160 micrograms per day during a menstrual cycle, and 80 micrograms per day in postmenopausal women (see chart opposite). Therefore, the restoration of the "premenopausal prime" in the postmenopausal woman requires the replacement of approximately the equivalent of the 80 micrograms of estradiol per day that she no longer secretes endogenously.

**Oral ethinyl estradiol is about 2 to 2½ times as potent as parenteral estradiol. Therefore, the replacement of 80 micrograms of endogenous estradiol production per day is accomplished by the oral administration of 32 to 40 micrograms of ethinyl estradiol per day.**

Each Halodrin tablet contains 20 micrograms of ethinyl estradiol, which means that the recommended dosage of 2 tablets per day provides 40 micrograms of ethinyl estradiol. This offsets the loss of 80 micrograms of endogenous estradiol production in the menopausal woman; i.e., restores the "premenopausal prime."

Each Halodrin tablet also contains 1 mg. of Upjohn-developed Halotestin* (fluoxymesterone)—the most potent oral androgen known. The primary purpose is to "buffer" the ethinyl estradiol just enough to prevent breakthrough bleeding, which is obviously undesirable in the menopause. It also exerts other beneficial hormonal effects, one of which, in common with ethinyl estradiol, is a powerful anabolic action so desirable in patients of advanced years.

Upjohn

*TRADEMARK, REG. U. S. PAT. OFF.

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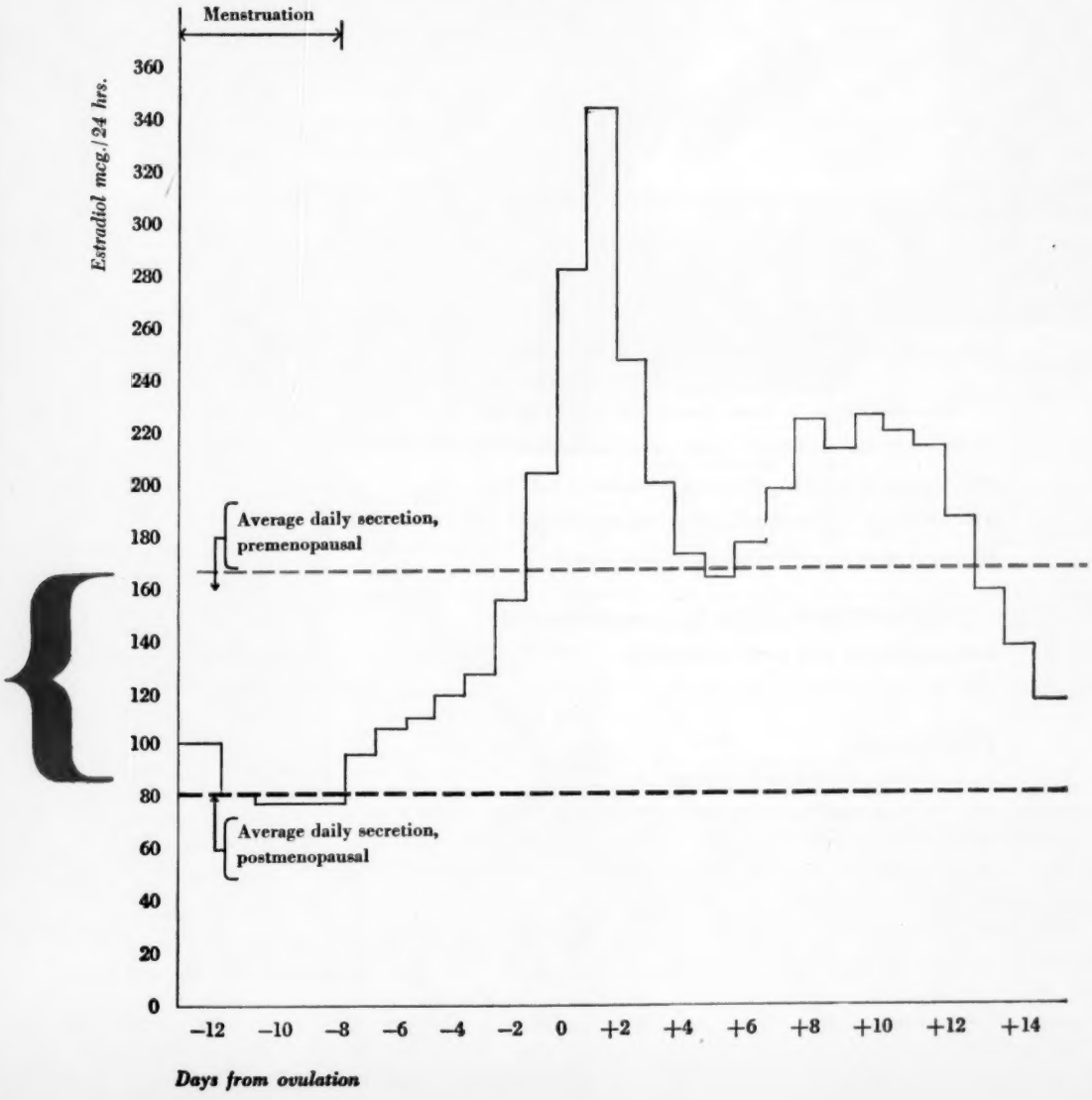
**Endogenous estrogen secretion (mcg./24 hours)**
(calculated from average 24-hour urinary excretion of estradiol, estrone, and estriol)



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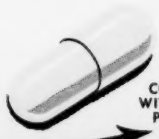
NON-SEDATIVE ANALGESIC

# CONTRAMAL

CONTRAMAL



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CONTRAMAL WITH CODEINE PHOSPHATE 30 MG. (NO. 3)

NOTE NON-SEDATIVE QUALITY

**ALL THREE ASPIRIN-FREE**

ALSO WITH CODEINE

AVOID ACID REACTION

## CONTRAMAL

### FORMULA

**EACH CAPSULE CONTAINS:**

| | |
|---|---|
| Acetyl-p-aminophenol (5 gr.) (Acetaminophen) | 325 mg. |
| Salicylamide (3½ gr.) | 225 mg. |
| Caffeine | 30 mg. |

**OPAQUE PINK AND GRAY CAPSULES**

Also supplied as Contramal with Codeine Phosphate 15 mg. (No. 2, Opaque Yellow Capsules) and Contramal with Codeine Phosphate 30 mg. (No. 3, Opaque Scarlet Capsules).

## CONTRAMAL

*(Non-Sedative Analgesic)*

**INDICATIONS:**

Simple headache, pain and discomfort associated with the common cold and grippe, sciatica, bursitis, rheumatic and arthritic pain, myositis, after minor surgery and dental extractions, and generally where the relief of pain without sedation is desired.

**DOSAGE:**

**Contramal**—Adults, one or two capsules initially, followed by one capsule every three to four hours. **Contramal with Codeine Phosphate No. 2 and No. 3**—Adults, one capsule as required.

**NOTE:**

Contramal with Codeine Phosphate Capsules, both strengths, are Class B Narcotic Preparations (Oral prescriptions permitted).

**SUPPLIED:**

**Contramal**—Bottles of 100 and 1,000 capsules.
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**FULL-DOSE ANALGESIC**

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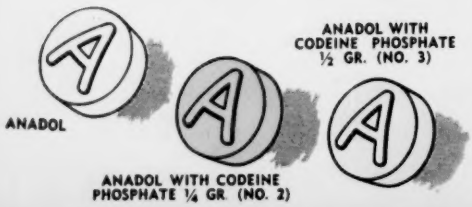
# ---→ *between analgesics!*

ANALGESIC

# ANADOL
SEDATIVE-ANALGESIC
# ANADOL




ASPIRIN-FREE

NOTE SEDATIVE QUALITIES

NO ASPIRIN AVOIDS ACIDITY

BALANCED FORMULA

## ANADOL

### FORMULA
**EACH TABLET CONTAINS:**

| | |
|---|---|
| Phenobarbital | ¼ gr. |
| Warning—May be habit forming | |
| Acetaminophen | 2½ gr. |
| Salicylamide | 3½ gr. |
| Hyoscyamine Sulfate | 0.0004 gr. |
| Atropine Sulfate | 0.00002 gr. |
| Scopolamine Hydrobromide | 0.00008 gr. |

**WHITE COMPRESSED TABLETS**

Also supplied as Anadol with Codeine Phosphate ¼ gr. (No. 2, Pink Tablets) and Anadol with Codeine Phosphate ½ gr. (No. 3, Yellow Tablets).

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*(Sedative-Analgesic)*

**INDICATIONS:**
Tension headache, dysmenorrhea, premenstrual tension, bursitis, neuralgia and neuritis, pain and discomfort associated with the common cold and grippe, after minor surgery and dental extractions, and wherever the relief of pain and mild sedation are indicated.

**DOSAGE:**
**Anadol**—Adults, one or two tablets every four hours. Children (over 5 years) one-half to one tablet every four hours. **Anadol with Codeine Phosphate**, both strengths, one tablet as required.

**CAUTION:**
Federal law prohibits dispensing without prescription. Anadol with Codeine gr. ¼ and gr. ½ are Class B Narcotic Preparations (Oral prescriptions permitted).

**SUPPLIED:**
**Anadol**—Bottles of 100 and 1000 tablets.
**Anadol with Codeine Phosphate** (both strengths)—Bottles of 24, 100, and 500 tablets.

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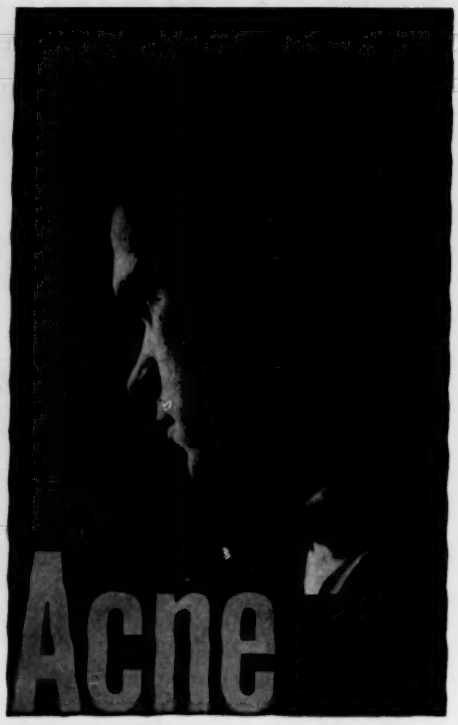


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1. Hodges, F. T.: *GP* 14:86, Nov., 1956.

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†Literature and bibliography available on request.

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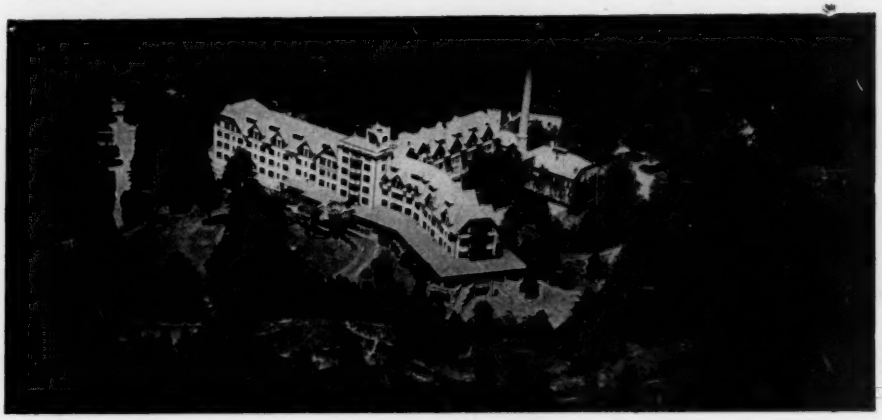

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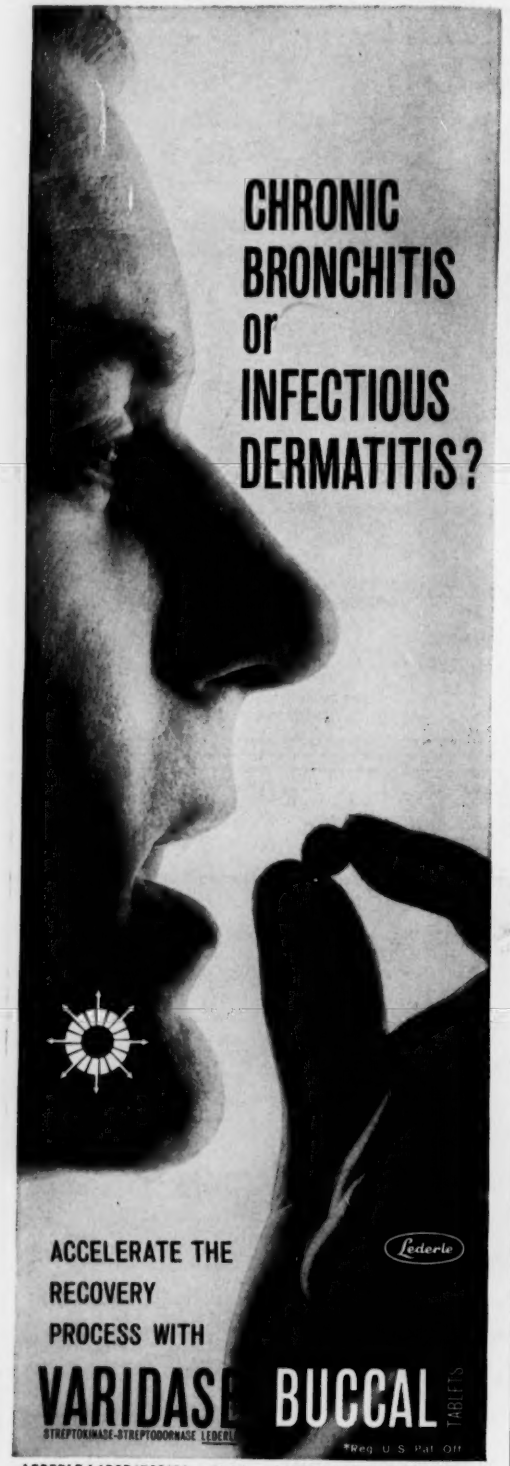


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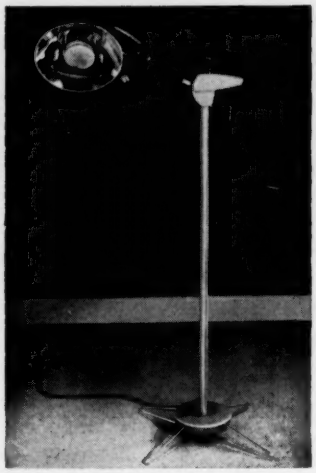

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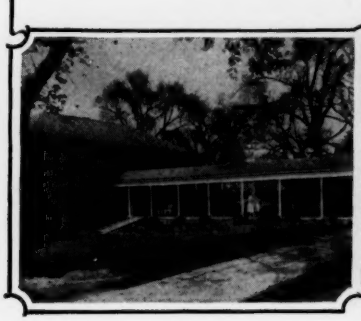

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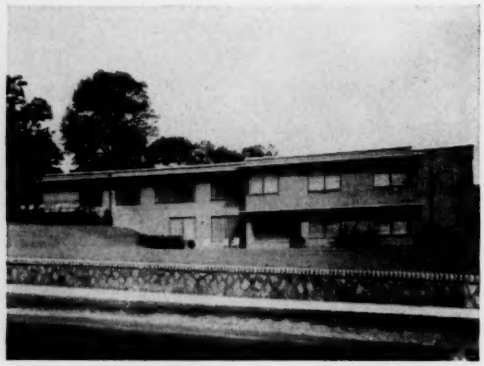

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